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Environmental sustainability: A distinguishing cognizance in the Hosiery industry of Ludhiana

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Abstract

Increasing pace of industrial development has created concern for the environmental issues. Industrial organizations are the main consumer of natural resources provided by the environment. With the aim of exploring the status of awareness and practice of environmental sustainable practices in hosiery units of Ludhiana, this study was planned. An exploratory survey of 80 randomly selected hosiery industries was conducted in Ludhiana and the data was collected using the questionnaire cum interview schedule. The results revealed that majority of the units were aware of various serious environmental issues but only very few were sincerely making an effort towards trying to operate on the principles of social and environmental responsibility. Others operate simply to maximize profits and market shares externalizing their costs to the environment and the communities. Large scale units were more conscious regarding issues of corporate government, environmental and social responsibility in comparison to small and medium scale units. This research was aimed at making industry aware of the seriousness of global warming and, hence motivating them to do something regarding it.

Keywords: Empirical Research, Environmental policy and goals, Environmental sustainable practices, effect on performance.

Introduction

Climate change is rapidly becoming a dominant issue in today's context and the business houses need to adapt strategies to address these concerns. Impacts of climate change on eco-system had been observed in the form of increase in the dry season length by several months, decreased rain in some areas of the Indian subcontinent, Amazon Basin, Southern and Western Africa, increase in dry thorny forest in the Nilgiris of the Western Ghats of India, and depletion of soil fertility (Ramakrishnan, 2001). UN convention on biological diversity, had also noted various natural changes such as, global mean sea level rose by 10-20 cm; decrease in overall volume of glaciers in Switzerland by 2/3; decrease in Arctic ice thickness in late summer and early autumn decreased by approximately by 40 percent; losing ice mass upto 90% in Mount Kenya, 82% in mount Kilimanjaro; and 40-60 percent decrease in total available water in the large catchment basins of Niger, Lake Chad and Senegal. In India also, glaciers in the Himalayas are receeding at an average rate of 15m per year, which is consistent with rapid global warming giving clear signals that the world is heading for an environmental disaster (Rajagopalan, 2005,p.5). Even in Tibet, which is the highest region in the mid-latitudes and is seen as a barometer of global warming, the average temperature has been rising by 0.31^0 C every decade, precipitation has increased by 6.6 mm every 10 years over the past five decades, extreme variation in temperature is experienced from -36.7^0C TO 32.3^0 C ("Tibet feels the heat of global warming,"2014, p.20).For a developing country, India with a large population that has already crossed the 1.25 billion mark, and is still expanding. In common with many other countries in the developing tropics, it has a rich cultural diversity superimposed upon an equally rich ecological diversity. India faces many challenges. The demands from the sheer number of people affect land use dynamics at the local level, leading to resource degradation. Rapid industrialization is already leading to the pollution

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problems, impacting upon air, water and soil quality *(*Ramakrishnan,2001).Most countries had made efforts to improve the energy efficiency of their systems and reduced the energy consumption. Some apparel manufacturers have acknowledged that working towards achieving sustainability in all its activities is the best, and perhaps the only choice for any organization to progress. Moreover, it is very important to gain advantage over competition.

In the context of environment, any practice followed by the industry is said to be sustainable if an optimum stock of natural resources (such as fossil fuel) for future is maintained or the pollution caused by factories and vehicles be contained forever in the ecosystem without any adverse impact (Envecologic, 2012). Keeping the importance of promotion of sustainable activities in the industries, this research was planned with following aims and objectives-

To find out the extent of awareness regarding environmental sustainability issues in hosiery industry of Ludhiana.

To compare and analyze the extent of environmental sustainability activities being practiced in the small, medium and large scale hosiery industry of Ludhiana.

Methodology

The study was conducted to find out the status of environmental compliance and practices in hosiery industry of Ludhiana. Ludhiana was selected as it is not only Punjab's industrial capital but is also an important upcoming hosiery and apparel cluster of India. Since all the firms in the Ludhiana cluster were not registered, it was not possible to draw a list of complete industrial population. Hence, the sampling frame was obtained from Ludhiana Knitwear Club (Regd.) having membership of 800 units representing all categories. The sampling unit for the study was an individual hosiery unit of Ludhiana which was a member of Knitwear Club. Treating this as a proxy for the population, 80 hosiery units (10% of the population) were selected which were considered adequate and manageable to obtain the required data. List of all the member firms was taken from its office and appointments were made from the owners with the help of Knitwear Club officials. Sample area was divided in four regions namely Area I, II, III and IV as given in Figure 1. Twenty units were randomly selected from 4 areas each.

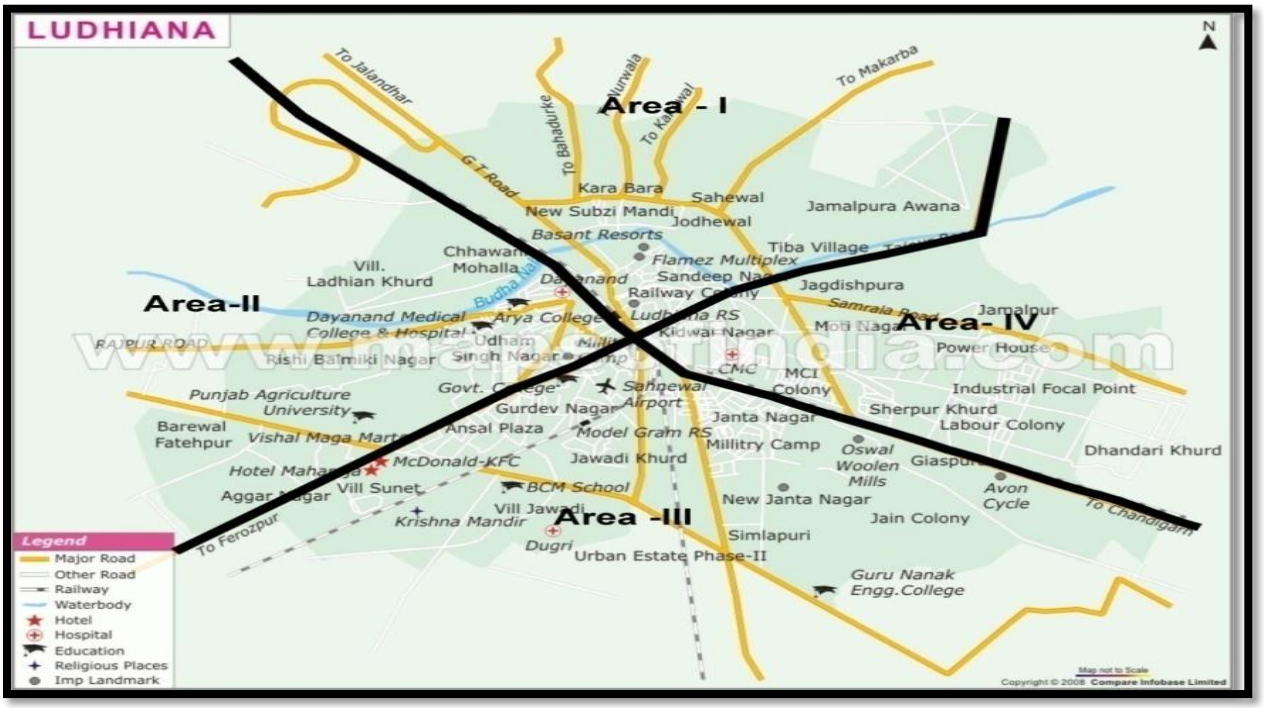

Figure 1.Detailed map of Ludhiana Adapted from Bhakoo. 2010

Informal talk with the General Manager District Industry Centre, Ludhiana helped in understanding of the various environmental laws which the hosiery industry has to confirm to. Survey of hosiery units was conducted regarding their environmental awareness and practice. An interview schedule was prepared to find out the environmental awareness in hosiery industry of Ludhiana. To ensure the positive response, the objectives of the study was explained to the respondents and they were assured that the information provided by them would be kept confidential and would be used for the purpose of this investigation only with a view to draw general conclusions. They were further assured that the specific information pertaining to their particular unit would not be disclosed to anybody. The interview schedule was pretested on 8 knitwear units of Ludhiana (10% of the total sample) which were not included in the final list of selected units. This was done to identify the flaws, limitations and bottlenecks which were expected to be encountered during full scale study. On the basis of the results of pre-testing, appropriate modifications were made in the interview schedule.

Results and Discussions

The results of environmental sustainability awareness and practice survey are discussed into two sections namely demographic profile, awareness and implementation of sustainable environment practices.

a) Demographic Profile

The demographic profile of the respondents as shown in Table 1 reveals that 56% of the respondents were human resource managers, 31% were general or executive managers while only 8% were environment managers. Majority of the respondents (64%) in small scale were human resource managers in comparison to 75% environment and 25% human resource managers respectively in large scale hosiery units. This could be because most of the small and medium scale units in Ludhiana do not have a separate environment department and all the environment related efforts are generally initiated by human resource department or the owners themselves. Most of the large scale units had separate environment and safety departments which works continuously towards creating general awareness amongst all regarding energy conservation and initiates various environmental sustainable practices throughout their units. The distribution of the respondents on the basis of experience revealed that 45% respondents had an experience of 10 to 15 years of working in the industry, while only 8% of the respondent had experience of less than 5years. It was also found that 74% of large scale unit respondents had more than 15 years of experience in comparison to 35% and 37% of medium and small scale units respectively. This may be due to the fact that most of the large scale units had employed environmental experts on good pay packages who had been involved full-fledgedly in green practices since long as shown in Table 1 while in small and medium scale units most of the respondents were from other departments other than environment, and, hence had very little experience in the matters of implementation of environmental practices that is from 10- 15 years experience. It was found that export oriented units of Ludhiana, mainly exported garments to North and South American continent countries and European Union countries. Eighty five percent large scale units exported garments to mainly EU in comparison to 43% and 41% of small and medium scale units respectively which exported to European Union, Asian continent, North and South America as shown in Figure 2. These findings were in line with the research conducted by Uchikawa (2012) revealing that European Union and North America were the main markets for exports. Figure 3 clearly depicts that majority of the small scale and domestic units (55%) manufactured garment for local market or had clients within Punjab in comparison to 14% medium scale unit which had buyers based in Delhi who further exported garments to other countries. The result is in concurrence with Singh **(**2011) which revealed that about 70% of woollen garment exports from India are made from Ludhiana. "Diagnostic study …..cluster"(2009) also revealed that exports are being affected either directly or through merchant exporters, buying agents and buying houses. Figure 4 revealed that 56% of units manufactured T-shirts followed by 49% units producing tops, jackets, sweaters, cardigans, skirts and so forth. Denims were found to be least manufactured. Majority of the units produced ladies wear followed by men's wear and children wear

Table 1 Demographic Profile of the Respondent

Variable	Options	S		M		L		T	
		F	%	f	%	f	%	f	%
(i) Designation	Executive/ General manager	20	36	5	29	0	0	25	31
	Head of Department	0	0	4	24	0	0	4	5
	Environment manager	0	0	2	12	6	75	6	8
	H.R Manager	35	64	6	35	2	25	45	56
(ii)Experience (years)	<5	4	7	2	12	0	0	6	8
	5-10	5	9	0	0	1	13	6	8
	10-15	26	47	9	53	1	13	36	45
	>15	20	37	6	35	6	74	32	39

S=small; M=medium; L=large scale unit; T=Total units. n=80(S=55, M=17, L=8)

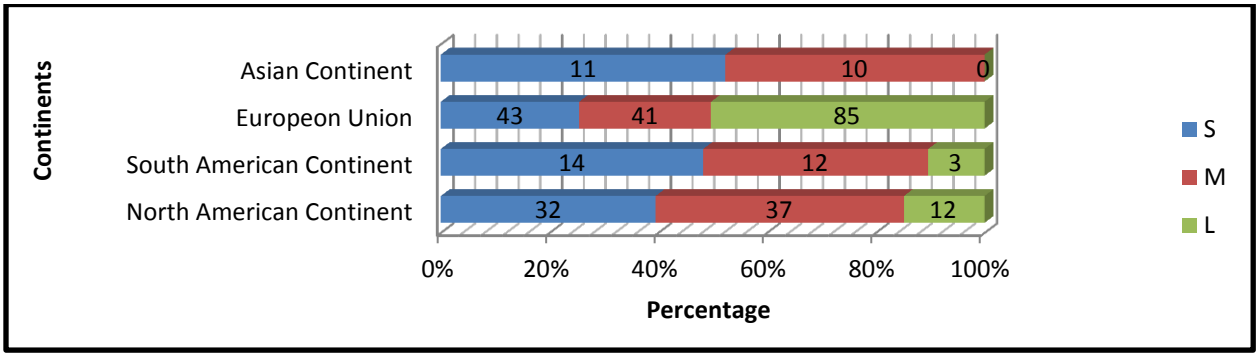

***Figure 2.*Bar diagram showing the distribution on the basis of continents to which garments are exported**.

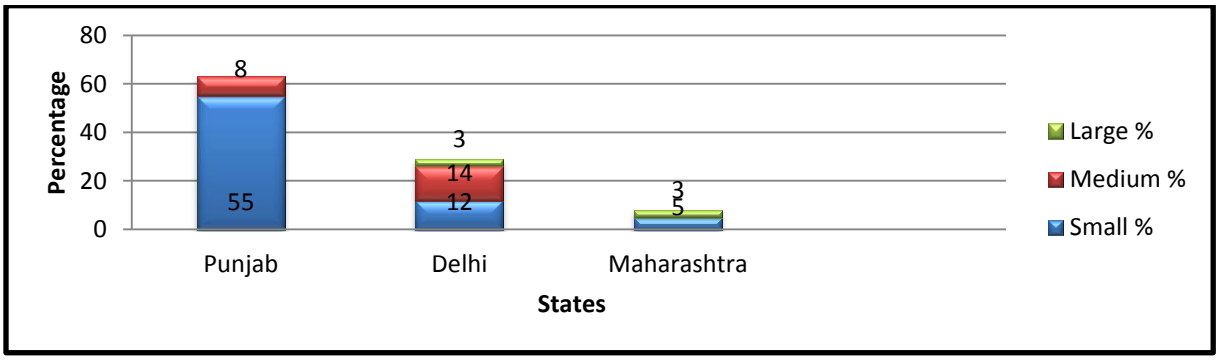

***Figure 3.*Column diagram showing the distribution on the basis of states from which garments are exported**.

garments. The result was supported by the survey conducted in hosiery industry by Singh (2011) and Uchikawa(2012) that Ludhiana is the main production centre of T-shirts. The knitwear products manufactured are further divided in two parts - winter wears and summer wears. Winter wears includes sweaters, woollen socks, pullovers, cardigans, thermal wear, gloves, mufflers, shawls, jackets, jerseys, and so forth. Summer wears includes T-shirts, cotton and blended socks, under garments, knitted bed sheets, knitted skirts, knitted tops, sportswear, night suits and so forth.

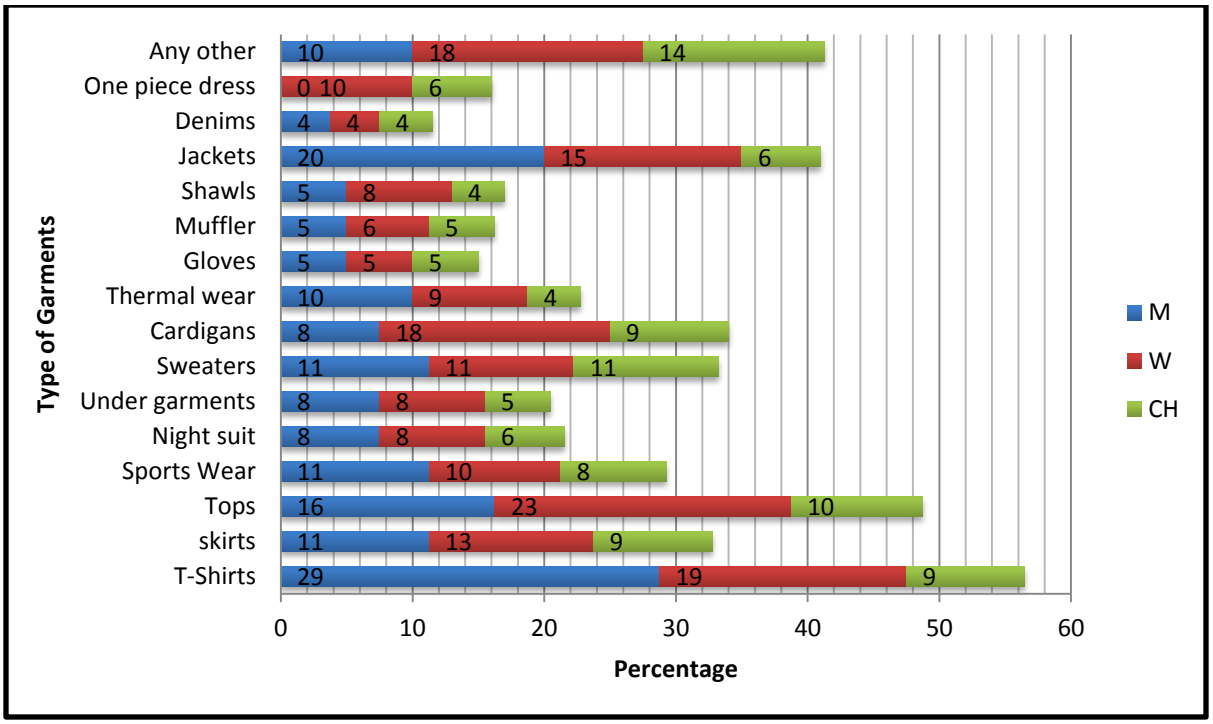

Figure 4 Bar diagram showing the distribution on the basis of garments produced.

b) Awareness and Implementation of Sustainable Environment Practices

This section dealt with finding the extent of awareness and implementation of sustainable environment practices. The respondents were interviewed regarding the extent of awareness and sustainable environment practices followed in their units. The results revealed that majority of the units that is 78% were aware of the global warming as an urgent environmental problem. But they were not serious regarding making a collective effort towards its reduction and the urgency of the situation. Majority of the small scale units (69%) were not aware of the effect of the global warming on the future generation in comparison to large scale units which were enthusiastically organized and participated in the environment generating workshops regularly with the aim of making their employees realize the seriousness of the rise in global temperatures and their responsibility towards this dangerous situation. Majority of the units (73%) were aware of the major environmental concerns in today's era, whether it is rise in temperature, increase in hazardous waste on land, rise in air and water pollution; water shortage; and disappearance of greenery and natural environments. Very few units (16%) were or aware of food problems; declining convenience and comfort caused by congestion; and overcrowded conditions.The small scale units respondents gave justification that they hardly get time to think of environmental issues as they are busy fire fighting and completing orders. While majority of large scale units had a separate environment department which included environmental experts working independently in the organization, by participating regularly in seminars and conferences on environment related topics and further making all the employees of the unit aware of the environmental challenges faced by the industry. Most of the respondents were aware of the consequences of climate change namely rise in temperatures, and rise in sea levels causing destruction of natural environment. Very few units were or aware of extinction of species, precipitation, spreading of epidemics, air and water contamination, famine and malnutrition, deforestation and respiratory diseases as a consequence of climate change. The results were in line with the findings by Singh (2011) revealing that hosiery units of Ludhiana had an increased

consciousness on issues such as use of polluting dyes, usage of child labour, and unhealthy working conditions. Analysis of the Table 2 reveals that overall 55% of the hosiery units in Ludhiana had environmental policy or goals. All the large scale units had environmental policy in comparison to only 45 % small scale units. All large scale units were compliant to the government environmental rules, followed by 65% of medium scale units in comparison to 40% of the small scale units .Majority of the units followed different environmental standards and rules as per the demand and requirements of the buyer. The result was supported by the study conducted by Kaur (2013). The results revealed that 58% respondents considered environmental policy of the apparel unit important and part of Corporate Social Responsibility (CSR) while 19% had formed environmental policy due to the mandatory norms of the Government. Very few of the apparel units i.e. 5% had implemented environment policy due to company's commitment towards environment. Only 2% units had made an environmental friendly policy due to the buyer's pressure as shown in Figure 5.

Table 2 Distribution on the basis of Presence of Environmental Policy, Goals, and Compliances

Variable	Options	S		M		L		Total		x^2	df	p-value	T-value
Environmental policy/ goals		**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**				
	Yes	25	45	11	65	8	100	44	55	9.22	2	.010*	5.99
	No	30	55	6	35	0	0	36	45				
Environmental compliances	**Yes**	22	40	11	65	8	100	41	51	11.63	2	.003**	5.99
	No	33	60	6	35	0	0	39	49				

S=small; M=medium; L=large scale unit; T=Total units;x^2 = chi square; df= degree of freedom; T-value=Table value; p-value= significance n=80 (S=55, M=17, L=8)

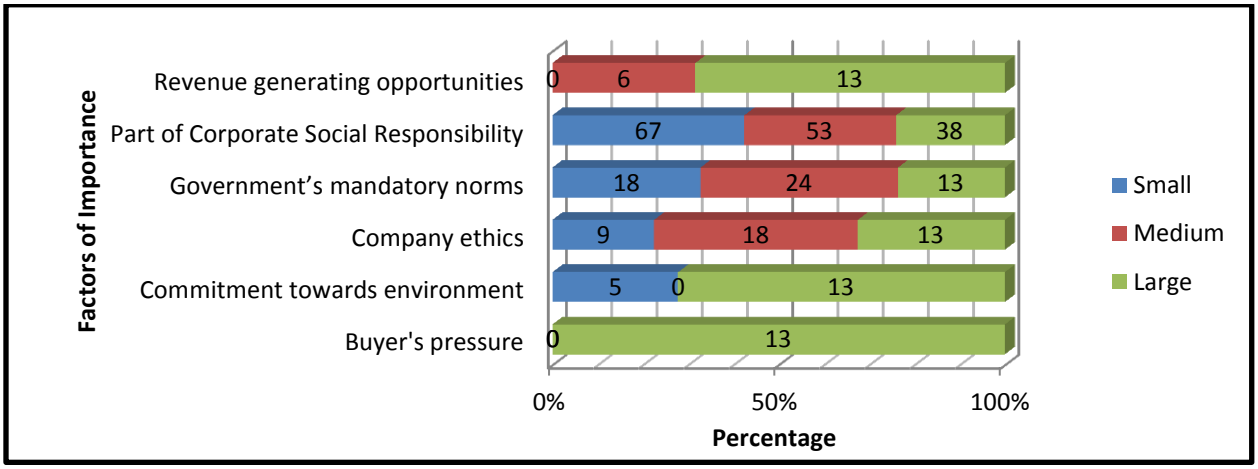

Figure 5. Bar diagram showing factors of importance of environmental policy and goals.

Hypothesis: ***There is a significant difference in the adoption and practices of environmental sustainable activities among small, medium and large scale units***

The hypothesis was framed with the aim of finding the difference in the performance of the environmental sustainable activities among small, medium and large scale units. Table 3 gives a summary of Chi square analysis of the Practice of

Environmental Sustainable Activities. Small, medium and large scale apparel units were found to be practicing various environmental sustainable activities to a varying extent as the chi- square analysis in Table 3 shows that large scale units were engaged in such activities linked to personal responsibility, transparency, innovation, conservation, waste management and leadership. Environment friendly practices related to workforce capability were performed at same level in all sizes units. Null hypothesis was rejected and alternate hypothesis was accepted that there is a significant difference between the practice of various environmental sustainable activities in small, medium and large unit as $p<0.05$ except for the ones related to workforce capability.

Table 3 Summary of Chi-square Analysis of the Practice of Environmental Sustainable Activities

S.No	Related Activities	S		M		L		*T*		x^2	df	T-value	p-value
		f	%	f	%	f	%	f	%				
1	Personal Responsibility	68	124	36	212	42	525	146	183	11.9	2	5.99	0.00
2	Transparency	18	33	21	124	38	475	77	96	9.10	2	5.99	0.01
3	Innovation	34	62	14	82	32	400	80	100	8.67	2	5.99	0.01
4	Conservation	99	180	66	388	44	550	209	261	31.8	2	5.99	0.00
5.	Waste Management	1	2	9	53	21	263	31	39	18.2	2	5.99	0.00
6.	Leadership	5	9	17	100	14	175	36	45	6.5	2	5.99	0.04
7.	Work force Capability	19	35	11	65	15	188	45	56	2.2	2	5.99	0.34ns

S=small; M=medium; L=large unit; T=Total units. x^2 = chi square,.df= degree of freedom. T-value=Table value. p-value= significance. p-value<0.001=*.p-value<0.01=**.p value<0.05=* and p-value>0.05=ns.**

Seventy five percent of large scale units were regular in conducting various environmental practices in comparison to only 1% of small scale units as shown in Figure 6.This may be due to the fact that in small scale units, managers dealing with environmental practices were multifaceted and were also engaged in performing other duties in the units, hence, they were always fire fighting for the completion and shipment of orders. They did not even had time to think of carrying out any extra activity in the unit. In large scale, experts in the field of environment were appointed to carry out the environmental friendly practices regularly.

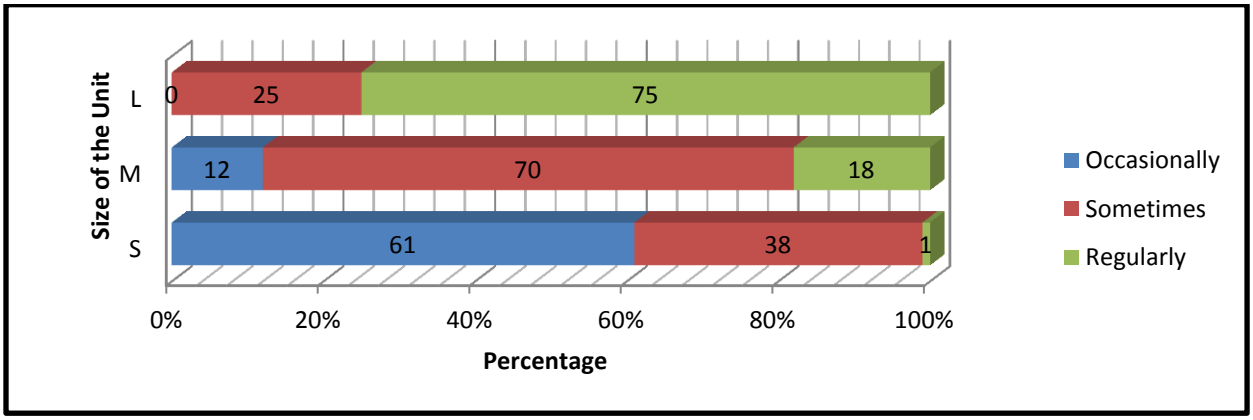

Figure 6 Bar Diagram showing frequency of performance of environmental sustainable activities.

Figure 7 clearly depicts that in most of the small scale units (55%), no one was particularly engaged to look after the environmental activities being performed. While in large scale units, there was segregation of tasks as environment related activities was carried out frequently by the special department and general activities were conducted by HR managers.

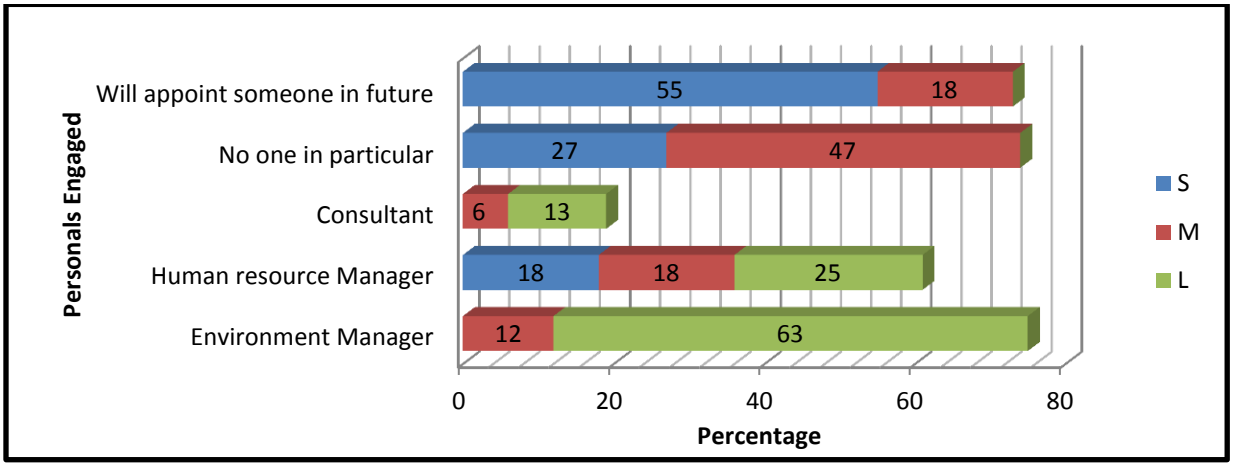

Figure 7 **Bar Diagram showing the distribution on the basis of personals engaged in environmental matter.**

It could be because, Ludhiana hosiery industries were facing shortage of labour and also the set up of most of the small scale units was traditional where few personals were given responsibility of running all the activities right from dealing with buyers to managing production, hiring employees and so forth. Sometimes it's the owner himself who was engaged in supervising all the activities being carried out in the organization. The results as shown in Figure 8 revealed that 75% of the small scale units were not sure about the impact of environmental efforts on the overall performance of the units as they did not have any measurement criteria in the form of environmental KPI (Key Performance Indicators). Majority of large scale manufacturers were sure of the environmental benefits in comparison to 12% and 5% of medium and small scale units respectively.

Conclusion

With the exploitation of natural resources going on relentlessly shows alarming negative impacts on the natural environment, the responsibility of business enterprises to the society is being questioned. Now, apparel industries are increasingly paying more and more attention to environmental issues in today's competitive environment. Hosiery industry of Ludhiana has also started promoting green manufacturing as a part of a continuous improvement strategy to help manufacturers to improve their productivity, profitability, competitiveness and also save the environment. Even though large scale units are more aware and are practicing environmental sustainable activities to a higher extent in comparison to medium and small scale units, still there is a dire need to create public awareness regarding environmental degradation, so as to make corporate world conscious of their duty of conserving the environment.

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