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Proactive Corporate Environmental Management Practices in Industrial Estate Multan, Pakistan

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ABSTRACT

Industrial growth in Pakistan is leading towards an increased inclination for the adoption of corporate environment management. With the passage of time, more global environmental problems are becoming more obvious and hazardous. Progressing facilities have to be more proactive in environmental management and prefer taking voluntarily environmental actions for regulatory compliance. However, there are comparatively few researches have explored the motivation for adoption of proactive environmental management strategies (PEMS) especially for developing countries like Pakistan. The objective of this study is to assess the relevance of environmental management practices (EMPs) in the Multan Industrial Estate, Pakistan. Moreover, to identify the driving forces for adopting proactive environmental management was the objective of study. The standard questionnaire was devised to determine the drivers for proactive corporate environmental management. The study conducted a survey of Multan industrial estate to assess the PEMS. The data was collected from 420 respondents and analyzed by sophisticated statistical techniques using SPSS. The results show that a large number of respondents agreed on the importance of environmental management (IEM) and its driving forces for the adoption of PEMS. From the study, regulatory pressure (RP), cost factors, competitive requirements, stakeholder forces were found as forces for the adoption of EMPs. IEM had the highest mean in analysis. A significant relationship was found between all the driving forces for adoption of EMPs. IEM was found to be highly correlated with RPs. High internal consistency was also identified that shown the reliability of questionnaire. A number of studies supported the research results of the current study. This study valuable to both government officials and environmentalist to device sustainable polices for Pakistan.

Keywords: Proactive Environmental Management Practices, Regulatory Pressure, Cost Factors, Stakeholder Forces, Industrial Estate Multan, Pakistan
JEL Classifications: C12, Q51

1. INTRODUCTION

For every country, industrial sector played a pivotal role to increase economic development. It is historically true that those countries which have strong industrial sector show more economic development and growth. In Pakistan, 25% of the gross domestic product (GDP) is contributed by industrial sector which is the second largest individual sector of the economy. Large, medium and small-scale industries are comprised of this industrial sector. From 2010 to 2013, the large scale industries adds 4.4% to the real GDP growth rate whereas the small scale industries contribution is 7.5% (Jaleel, 2012).

Multan industrial estate is a significant benchmark for industrialization in Punjab. Multan industrial estate is located at South West of Multan city with distance of about 15 km. Provincial Government approved the establishment of an industrial estate in the Southern Punjab and for this purpose 1410 acres of land was purchased. Due to lack of funds, Punjab Government decided to expand it into two phases. Phase-I completed in 1980's comprising of 743 acres whereas, Phase-II were planned to be developed subsequently on 667 acres. The major industries include:

- Flour mills
- Leather
- Engineering
- Animal feed
- Warehousing/cold storage
- Chemical and pesticide textile and garment
- Paper and board.

(Source: PIE, 2013).

According to McCloskey and Maddock (1994. p. 27),

> "To date few organizations have achieved a truly "green" corporate strategy, in part because many companies lack a systematic approach to recording, monitoring and measuring factors which could have a deleterious effect on production and resourcing."

Today the role of management is centered on the efficient performance of the organization. Therefore, management now consists on various functional disciplines - A chain of techniques and specialisms. Ambitious sustainability initiatives have been invested in increasingly progressive corporations whereas investments for environmental problems are welcome by society, firms, and managers have to recognize the circumstances supporting the generation of both corporate profits and public benefits (Mintzberg, 1983).

Environmentally sound policies are adopted by many companies only to follow the legal regulations. Such control is usually reactive because complying only with such rules is not satisfactory, moreover such legislation is improbable to put a ban on such products or processes which damage the environment as this will go against the commitment of most governments of Western countries to preserve the free market system (Beharrell, 1991).

The present study quest for the following research questions in the present situation i.e.,

I. Whether an environmental management practice (EMP) has been adopted in Multan industrial estate?
II. Is there any impact of EMPs on performance of industries in Multan industrial estate?
III. Which driving forces motivate the industrialists to adopt EMPs in Multan industrial estate?

These questions should need an answered before devising any sustainable development policies in a country like Pakistan.

In addition, of the research questions, the study linked with the objectives of the study i.e.,

I. To assess the relevance of EMPs in the Multan industrial estate.
II. To identify the driving forces for adopting proactive environmental management and,
III. To notify the problems hindering in effective implementation of EMPs (IEMPs).

The significance of the study need to discussed the following dimensions in this study i.e.,

I. To recognize the importance of proactive environmental management strategies (PEMS) for the industries, and
II. To developed the action plan for the adaptation of proactive EMPs.

There are very few studies have been conducted in the vital assertions of proactive EMPs in relation to industrial performance. This study facilitates to encourage future researchers to conduct more researches in this domain.

2. LITERATURE REVIEW

By the last few decades, environment of earth had been damaged and caused a lot of sufferings to human beings and other species. As industries are responsible for this devastation to a great extent, they must adopt strategies to reserve it. Up till now most facilities have started responding marginally to environmental problems. Change has to be much more radical. Periodic environmental audits, green marketing and printing glossy environmental reports will not rehabilitate dangerously contaminated land, protect an indigenous population in developing countries there are numerous opportunities for the improvement of corporate environmental management (Welford, 1998).

EMPs defined by Montabon et al. (2007. p. 998) i.e.,

> "EMPs are the techniques, policies and procedures a firm uses that are specifically aimed at monitoring and controlling the impact of its operations on the natural environment."

In literature EMPs had been discussed in various aspects, as Liu et al. (2010), concluded that EMPs refers to the action taken by mining firms to remedy environmental pollution *viz.* carbon emission reduction, efficient energy use and efficient water usage. Plenty of researches had been conducted to evaluate the factors external to the corporations that drive the adoption of PEMS such as regulation, stakeholder pressure and competitive forces (Hart, 1995; Dean and Brown, 1995) identified public pressure from non-governmental organizations. Gunningham and Thornton (2003) analyzed the enforced pressures in pulp and paper industry that compel the firms to enhance their environmental performance apart from regularity conformities. The concept of environmental performance is now perceived as different perspective comparative to decade ago. The progressive firms are striving to enhance their ethical images beyond following the strict regulations i.e.,

2.1. Regulatory Demands

Competitive corporations have no more an option to not complying with government regulations in international markets. Increasing public pressure on government to pass environmental laws has immensely raised the environmental accountability. Many industrialized countries including United States Environmental Legislation is going to be stringent day by day. Environmental management is the core of every growing business in the world. Regulations at federal, state and local regulations are operating in every business (Tyagi, 2013).

Jennings and Zandbergen (1995) explained regulatory demands as a force for firms' adoption of EMPs. They stated that regulatory enforcement as coercive forces has been the basic impetus of EMPs. Near about each firm in industry has applied similar practices. They quoted the instances of three mile island crisis damaged the legality of all firms of nuclear power industry in United States. As it was discovered that chlorofluorocarbons (CFCs) damaged stratospheric ozone, resultantly it led to institutional coercive forces and the production of CFCs was phased out.

2.2. Cost Factors

Non-compliance of environmental regulations brings legal and ethical crises for firms that turn expensive and hard to overcome. Economically disadvantaged countries do not have the resources to enforce stringent environmental management regulations.Whereas economically advanced countries puts social pressure by adopting high levels of environmental legislations. Concerning corporate environmental strategies economic factors in a country works as a barometer to evaluate emergence of stringent environmental policies. Firms of advanced countries such as china which have an increasing level of influence can expect stricter environmental legitimacy and enforcement over time (Thampapillai, 2002).

EMPs are adapted to the efficiency of production processes and reduce the cost of production. Empirical research results show that core economic motive for opting process-focused environmental practices is to have cost-effective and eco-efficient products (Stead and Stead, 1995).

2.3. Stakeholder Forces

Many firms adopt proactive strategies focus on basic management principles of cutting costs and reducing waste to respond shareholders and customer demands. In order to respond to the demands of increasingly diverse groups of stakeholders for profitability and environmental protection, many firms have adopted environmental management programs to advance their competitive positions. Like 3M, Sony, Kodak, Alcoa, Procter & Gamble, Volvo and Dell are known by their stakeholders regarding their exemplary environmental performance (Arias and Guillen, 1998).

Firms may also imitate EMPs that flourishing leading firms have adopted in their process and product. Additionally firms keep in view their customer requirements and responses. Primarily quality management standards have diffused undermining the customer - supplier relationship (Anderson et al., 1999). Raines (2002) conducted a study based on a survey across 15 countries where ISO 14001 certified companies were in operation. It was found that desire to be a good neighbor was the strongest inspiring factor to pursue certification.

A lot of instances are found in literature where firms have implemented EMPs to satisfy different environmental group pressures. For example, rainforest action network had prolonged consumer boycott of Mitsubishi Corporation, Mitsubishi declared it would stop using old-growth forest products (World Rainforest Movement, 1998).

2.4. Competitive Requirements

One of the important pressures exerted on firms to adopt PEMS is increasing competition among firms. Researches have identified that competitive practices influence PEMS (Patten, 1992). Whereas, it is ambiguous whether firms adopt environmental management programs in rivalry to other firms that adopt environmental strategies to separate themselves from competition or whether competitive best practices are acknowledged by the public to improve environmental control.

Evidently adoption of environmental stewardship is a good approach. It tactically differentiates product features in competition. Some industries do not put stringent regulatory pressures (RPs) on firms for adopting PEMS but it this does not mean that there lays no advantages for them. Eventually, a firm's feasibility is correlated to its ability to attain competitive advantage with benefits. This may be attained through innovations and progressively fulfilling consumers' desires.

3. DATA AND METHODOLOGY

3.1. Population

All the industries of Multan industrial estate were included in the population of the study. As Multan industrial estate is the only industrial estate in Southern Punjab. There were nearly 70 firms in the Multan industrial estate including flour mills, leather, engineering, animal feed, warehousing/cold storage, chemical and pesticide textile and garment, paper and board etc.

3.2. Sampling

Through the population of 70 firms nearly 12 strata's were established. Table 1 shows the list of industries located in Multan industrial estate.

There are 20% firms were elected by means of stratified random sampling technique, from each stratum. The arrangement of samples is presented in the Table 2.

These firms were categorized on the basis of their productions and were selected by adopting stratified random sampling. Total numbers of industries are identified from each stratum. 20% industries are selected from each stratum that is elaborated in "number of industries selected" column in the Table 2. 30 responses were taken from each industry selected from each stratum.

3.3. Development of Instrument

A five-point Likert scale was developed comprising 30 statements. The study used a questionnaire on proactive EMPs to determine the environmental management level of the firms in Multan industrial estate.

Table 1: List of industries

Strata	Number of industries
Auto parts	4
Drugs and pharmaceutical	4
Cotton spinning	5
Pesticide	3
Paper mills	15
Poultry feed	3
Garments	3
Solvent oil	4
Tannery	6
Textile and wool	15
Beverages	5
Flour mill	4
Total	70

Table 2: Sample description of the firms

Strata	Number of industries	Number of industries selected	Number of responses
Auto parts	4	1	30
Drugs and pharmaceutical	4	1	30
Cotton spinning	5	2	30
Pesticide	3	0	30
Paper mills	15	3	30
Poultry feed	3	0	30
Garments	3	0	30
Solvent oil	4	1	30
Tannery	6	2	30
Textile and wool	15	3	30
Beverages	5	1	30
Flour mill	4	0	30
Total	70	14	420

3.4. Data Collection

Standardized questionnaires send to 420 respondents in Multan industrial estate. 30 responses were collected from the each selected firm.

3.5. Scoring of the Instrument

A five-point scale was assessed by assigning weightage to every levels of scale. For each positive statement, following values were assigned;

5 for strongly agree, 4 for agree, 3 for undecided, 2 for disagree, 1 for strongly disagree.

The questionnaire was distributed for factor matrix analysis. Following factors were identified;

- Importance of environmental management
- IEMP
- RP
- Investor and customer pressure (ICP)
- Competitive pressure (CP).

Every factor was covered by different questions in questionnaire. Following questions were associated with these factors;

- Importance of environmental management (Q# 4-5, 8-11,14, 28-30)
- IEMPs (Q# 1-3, 17-18, 22)
- RP (Q# 12-16, 19)
- ICP (Q# 20-21, 27)
- CP (Q# 6, 7, 23-25, 26).

3.6. Analysis of the Data

The data was analyzed by calculating the following dynamics in the subsequent sequence by using SPSS;

- Frequency distribution
- Descriptive statistics including central tendency and mean dispersion analysis
- Chronbach alpha used for internal consistency of the questionnaires
- Estimation of factor analysis
- Calculation of Eigen value of factors
- Rotated component matrix
- Correlations matrix and
- Estimation of regression by using dependent and independent variables.

4. RESULTS

4.1. Frequencies

This section presents demographic characteristics of the respondents, frequency distribution, reliability statistics of questionnaires, factor analysis, descriptive statistics, correlation matrix and regression coefficients. Table 3 shows the demographic characteristics of the respondents.

The survey results show that there are 257 male and 163 female in numbers that were the respondents of the study. There are 105 respondents who have possess only 10 years of schooling, while there are 112 respondents who possess 12 years of schooling. Subsequently, 89, 97 and 17 respondents who possess bachelor degree, masters degree and others respectively. The greater chunk of income received is in between the range of Rs. 30,001 and Rs. 45,000 i.e. 129 respondents, followed by 95 respondents receiving the income in between the range of Rs. 45,001 and Rs. 60,000, 75 respondents receiving in between the range of Rs. 60,001 and Rs. 75,000, 57 respondents taking income in range between Rs. 15,001 and Rs. 30,000 and finally, only 28 respondents receiving more than Rs. 75,000. Table 4 shows the factor-wise frequency distribution of Factor 1.

Survey shows that around 94% respondents agreed that their facilities conduct self environmental audits rather than to just comply with regulations. 2% respondents remain neutral whereas 4% participants did not agree the statement of Question 4. Frequency of Q#5 in Table 4 indicates 94% respondents agreed that they receive incentives for contributions to environmental performance in their firm. 1.4% of participants remain neutral while 4.3% of respondents disagreed on the statements. Frequency of Q#8 in the Table 4 indicates nearly 94% respondents agreed that they require their suppliers to pursue environmentally friendly practices. While 5.2% respondents remain neutral. A low number of participants only 0.5% disagreed to the statement. In Table 4, frequency of Q#9 indicates that 80.7% respondents agreed to the statement that in their facilities employees were conscious of the importance of minimizing negative environmental impacts. 14.0% of the respondents were unable to decide their opinion on it, whereas only 5.3% participants disagreed to the above statement. Frequency of Q#10 in the Table 4 shows that 81.5% respondents agreed that they were provided suitable training in environmental management in their firm. Nearly 13.3% participants remain neutral, while only 5.2% respondents disagreed to the statement. Frequency of Q#11 in Table 4 describes that 74.3% respondents agreed that their environment achievements were prominently quoted in annual reports of their facility. 23.8% respondents remain neutral while 1.9% participants disagreed to the statement. Frequency of Q#14 indicates that 48.1% respondents of the study agreed that they were well prepared to meet anticipated environmental regulations. 34.3% participants were unable to decide their opinion whereas only 17.6% respondents disagreed

to the statement. Frequency of Q#28 reports that 73.3% of respondents agreed that being environmentally responsible improves employee morale, motivation and productivity. 17.9% respondents remain neutral while 8.8% participants disagreed to the statement. Q#29 indicates that 70.7% of respondents agreed that high upfront investment expense becomes a barrier in implementing proactive EMPs. Nearly 11% respondents remain undecided while 18.3% of participants disagreed to the statement. Frequency of Q#30 shows that 67.6% respondents agreed that unavailability of knowledgeable staff becomes a hurdle in implementing proactive EMPs. 26% of participants disagreed to the statement while 6.4% of respondents remain neutral.

Table 5 shows the factor-wise frequency distribution of Factor 2.

The Table 5 indicates that Q#1 shows 75% respondents strongly agreed that environment goals set by facility actually guide operational decisions. 17% respondents agreed on the statement while 8% respondents remain neutral. Only 0.5% respondents did not agree that environmental decisions may provide guideline for operational decisions.

Frequency of Q#2 shows that 56% of respondents strongly agreed that environmental responsibility was emphasized through well-defined environmental polices and procedures in their firms. 36% participants indicated an agreement on the above statement. While 8% respondents disagreed that environmental responsibility emphasized through environmental policies. Frequency of Q#3 explains that 62 % respondents highly agreed on the statement while 17% participants agreed that environmental standards in their firms were more stringent than government regulations. 12% respondents remain neutral whereas 8% respondents disagree the statement. Frequency of Q#17 indicates that 62.3% respondents agreed that they preferred to satisfy investor or owner desires to reduce environmental risks and liabilities. 1.9% of participants remain neutral while 35.7% respondents shown disagreement to the above statement. Frequency of Q#18 indicates that 55.4% respondents of study agreed that they protected or enhanced the value of their facility firm for investor or owner. 10.2% participants were undecided whereas 34.3% respondents did not agree to the statement**.** Frequency of Q#22 states that 79.1% of respondents agreed that they had ability to earn public recognition and customer goodwill with environmentally friendly actions. While 9.5% of respondents indicated response opposite to it. Only 11.5% participants remain neutral. Table 6 shows the factor-wise frequency distribution of Factor 3.

Frequency of Q#12 shows that 70.7% respondents agreed that they comply with current environmental regulations. 25% respondents remain undecided while 4.3% participants disagreed to the statement. Frequency of Q#13 in the Table 6 indicates that 58.6% participants agreed that taking eco friendly actions helps

Table 3: Demographic characteristics of the respondents

Characteristics	Frequencies in number
Gender	
Male	257
Female	163
Education	
10 years of schooling	105
12 years of schooling	112
Education	
Bachelors	89
Masters	97
Others	17
Income	
Up to Rs. 15000	36
Rs. 15001 to Rs. 30000	57
Rs. 30001 to Rs. 45000	129
Rs. 45001 to Rs. 60000	95
Rs. 60001 to Rs. 75000	75
More than Rs. 75000	28

Source: Survey results

Table 4: Frequencies on Factor 1 (IEM, (Q. No. 4-5, 8-11, 14, 28-30)

Item no.	Item	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
4	We conduct environmental audits for our own performance goals, not just for compliance	-	3.8	1.9	13.3	81.0
5	Employees receive incentives for contributions to environmental performance in our firm	3.8	0.5	1.4	43.8	50.5
8	We require our suppliers to pursue environmentally friendly practices	0.5	-	5.2	60.5	33.8
9	In our firm employees are conscious of the importance of minimizing negative environmental impacts	0.5	4.8	14.0	48.3	32.4
10	An adequate amount of training in environmental management is provided to all employees in our firm	3.8	1.4	13.3	50.5	31.0
11	Facility environmental achievements are given prominent coverage in facility annual reports	0.5	1.4	23.8	37.6	36.7
14	We are better prepared for meeting anticipated environmental regulations	5.2	12.4	34.3	16.0	32.1
28	Being environmentally responsible improves employee morale, motivation and productivity	-	8.8	17.9	27.6	45.7
29	High upfront investment expense is a barrier in implementing proactive environmental management practices	0.2	18.1	11.0	28.1	42.6
30	Unavailability of knowledgeable staff is a hurdle in implementing proactive environmental management practices	4.8	21.2	6.4	27.1	40.5

IEM: Importance of environmental management

Table 5: Frequencies on Factor 2 (IEMPs), (Q. No. 1-3, 17-18, 22)

Item no.	Item	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
1	Environmental goals guide operational decisions	-	0.5	7.9	16.9	74.8
2	Environmental responsibility through well-defined environmental policies and procedures	-	7.9	36.0		56.2
3	Our environmental standards are more stringent than mandatory governmental requirements	7.1	1.0	12.4	16.9	62.6
17	We satisfy investor or owner desires to reduce environmental risks and liabilities	-	35.7	1.9	37.1	25.2
18	We protect or enhance the value of the facility firm for investors or owners	-	34.3	10.2	23.3	32.1
22	We have ability to earn public recognition and customer goodwill with environmentally friendly actions	0.2	9.3	11.4	47.4	31.7

IEMPs: Implementation of environmental management practices

Table 6: Frequencies on Factor 3 (RP), (Q. No. 12-16, 19)

Item no.	Item	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
12	We are complying with current government environmental regulations	1.9	2.4	25.0	37.1	33.6
13	Taking environmentally friendly actions to reduce regulatory inspections and make it easier to get environmental permit	1.2	10.0	30.2	35.0	23.6
15	We preempt future environmental regulations by voluntarily reducing regulated pollution beyond compliance levels	8.1	13.3	27.1	16.0	35.5
16	We preempt future environmental regulations by voluntarily reducing unregulated impact	-	35.2	11.7	26.7	26.4
19	We satisfy lenders' desires to reduce environmental risks and liabilitie	1.4	27.4	10.2	34.5	26.4

RP: Regulatory pressure

in getting environmental permits. 30.2% respondents remain neutral on the statement while 11.2% respondents disagreed to the statement. Frequency of Q#15 shows that 51.5% respondents agreed that they preempt future environmental regulations by voluntarily reducing regulated pollution beyond compliance level. While 21.4% participants disagreed to the statement. 27.1% respondents remain neutral in their response. Frequency of Q#16 describes that 53.1% respondents agreed that they preempt future environmental regulations by voluntarily reducing unregulated impacts. Whereas 35.2% participants denied the statement. 11.7% respondents remain neutral to the statement. Frequency of Q#19 describes that 60.9% respondents agreed that they satisfy lenders' desire to reduce environmental risks and liabilities. While 28.8% respondents indicated response opposite to it. Only 10.2% respondents remain neutral. Table 7 shows the factor-wise frequency distribution of Factor 4.

Frequency of Q#20 reports that 71.7% of respondents agreed to the statement that they bother customer desire for environmentally friendly products and services. 5.0% participants of the study remain neutral while 23.4% respondents disagreed to the above stated statement. Frequency of Q#21 shows that 67.8% respondents were of the view that they prefer customer willingness to pay higher prices for environmentally friendly products/services. Only 15.7% participants of the study remain neutral in their response while 16.5% respondents disagreed on the statement. Frequency of Q#27 indicates that 76.6% of respondents agreed that being environmentally responsible attracts quality employees and reduces employee turnover. 22.9% respondents remain neutral while.5% of respondents disagreed to the statement. Table 8 shows the factor-wise frequency distribution of Factor 5.

Frequency of Q#6 shows 96.2% of respondents agreed that environmental cost accounting had been used in their facility, 3.3% of respondents were undecided, whereas 0.5% of respondents disagreed to the statements. Frequency of Q#7 shows 99.5% of respondents agreed that they made continuous efforts to minimize environmental impacts while only 0.5% respondents disagreed on the statement. Frequency of Q#23 indicates that 74.5% respondents agreed that investing in cleaner products and services differentiates their products or their facility. 15.5% respondents remain neutral while 10% respondents shown disagreement to the statement. Frequency of Q#24 indicates that 78.5% respondents agreed that improving environmental performance help they keep up with competitors. 8.8% of respondents remain neutral while 12.6% participants disagreed to the statement. Frequency of Q#25 shows that 73.8% of respondents agreed that environmentally friendly actions result in product or process innovations. 10.5% of participants given response opposite to it. 15.7% respondents remain neutral. Frequency of Q#26 shows that 79.7% of respondents agreed that environmentally friendly actions help reducing costs. 20% of participants remain undecided while only 0.2% respondents disagreed to the statements.

4.2. Reliability Statistics and Eigenvalue Statistics

Reliability of questionnaires has been checked for internal consistency by Cronbach's alpha. Table 9 shows the reliability statistics.

The first check of internal consistency is Cronbach's alpha. As a rule of thumb, Cronbach's >0.70 indicates that a latent variable exhibits adequate internal consistency. The statistic shows that the value of Cronbach's alpha is 0.769. It is actually the mean

Table 7: Frequencies on Factor 4 (ICP), (Q. No. 20-21, 27)

Item no.	Item	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
20	We bother customer desire for environmentally friendly products and services	15.5	7.9	5.0	36.2	35.5
21	We prefer customer willingness to pay higher prices for environmentally friendly products/services	9.8	6.7	15.7	36.4	31.4
27	Being environmentally responsible attracts quality employees and reduces employee turnover	-	0.5	22.9	27.6	49.0

ICP: Investor and customer pressure

Table 8: Frequencies on Factor 5 (CP), (Q. No. 6, 7, 23-25, 26)

Item no.	Item	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
6	We use environmental cost accounting	0.5	-	3.3	48.1	48.1
7	We make continuous efforts to minimize environmental impacts	0.5	-	-	70.5	29.0
23	Investing in cleaner products and services differentiates our products or our facility	1.4	8.6	15.5	42.1	32.4
24	Improving environmental performance helps us keep up with competitors	-	12.6	8.8	47.1	31.4
26	Environmentally friendly actions can reduce costs	-	0.2	20.0	45.7	34.0

CP: Competitive pressure

Table 9: Reliability statistics

Cronbach's alpha	Number of items
0.769	30

Cronbach's alpha value of all the 30 items of the questionnaire, which indicates a high level of internal consistency for our scale with this research data. It indicates that questionnaire is reliable. Subsequently, eigenvalue statistics is used to assess the factors which given weight to the respondents. Table 10 shows the total variance explained by eigenvalue statistics.

Table 10 shows the actual factors that were extracted. The section labeled "rotation sums of squared loadings," it shows only those factors that met criterion (extraction method). In this case, there were five factors with eigenvalues >2. The "percentage of variance" column describes the total variability (in all of the variables together) can be accounted for by each of these summary scales. Factor 1 account for 20.712% of the variability, Factors 2, 3, 4, and 5 has 17.480%, 14.286%, 8.433%, and 7.552% respectively. Cumulative, five factors shows 68.463% variability in the given data set. Table 11 shows the component matrix which shows five major components that given weight to the respondents.

Factor 1 comprises 13 questions; Factor 2 comprised 8 questions, Factor 3 shows 4 questions, Factor 4 shows 3 components and final Factor 5 comprises 2 questions. All five factors show the importance of proactive management strategies that given a weight to the respondents. These weightage we have already discussed in the frequency distribution tables where around 80% respondents are agreed the importance of PEMS in Pakistan.

4.3. Descriptive Statistics

After factor analysis, we have confirmed the five main factors i.e., importance of environmental management (IEM), IEMPs, RP, ICP and CP. Table 12 shows the descriptive statistics of the five main variables, that given the weight of the respondents. The respondent's questions were taken average and show the minimum, maximum, mean and standard deviation of the respective variables.

Table 12 indicates that the factor IEM has the mean 4.2710 and standard deviation 0.57157. The factor IEMP shows the mean of 4.3492 highest among all the five factors with standard deviation of 0.49675. The factor RP indicated mean 3.7258 and standard deviation 0.75631, while the factor ICP has the mean 3.6746 and standard deviation 0.82871. The factor CP had shown the mean of 4.0508 and standard deviation 0.57314.

4.4. Correlation Matrix

Correlation matrix shows the strength and directions between the variables. Table 13 shows the correlation matrix.

Table 13 shows the correlation matrix, where except ICP, all candidate variables having a positive correlation with the IEM, while there is a significant negative correlation between ICP and IEM. It was find out that maximum value of correlation coefficient (0.490) was found between RP factor and IEMP factor which showed that RP was clearly associated with the importance of EMPs. In the same way, a high correlation (0.444) was observed between IEM factor and IEMP factor, which indicated that IEM was clearly associated with the importance of EMPs. Like wise a positive relationship was found between CP and IEM with the value of 0.439. While the association between IEMP factor and CP with the value of 0.229 was moderate. Minimum value of correlation coefficient (0.156, 0.114) was found between ICP factor and RP, IEM and RP respectively. There was also relatively low positive correlation (0.048) between IEMP and ICP factor, (0.039) between RP and CP factor which showed comparatively weak association between these factors. A low relationship was found between (−0.122) and (−0.408) between ICP and IEM, CP and ICP respectively.

Table 10: Total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	Percentage of variance	Cumulative %	Total	Percentage of variance	Cumulative %
1	6.213	20.712	20.712	6.213	20.712	20.712
2	5.244	17.480	38.191	5.244	17.480	38.191
3	4.286	14.286	52.477	4.286	14.286	52.477
4	2.530	8.433	60.910	2.530	8.433	60.910
5	2.266	7.552	68.463	2.266	7.552	68.463
6	1.852	6.172	74.635			
7	1.319	4.396	79.031			
8	1.157	3.856	82.887			
9	0.872	2.905	85.793			
10	0.771	2.571	88.364			
11	0.708	2.361	90.724			
12	0.514	1.712	92.437			
13	0.446	1.486	93.922			
14	0.367	1.222	95.144			
15	0.340	1.134	96.278			
16	0.248	0.828	97.106			
17	0.170	0.566	97.672			
18	0.131	0.436	98.108			
19	0.112	0.374	98.482			
20	0.106	0.354	98.837			
21	0.074	0.248	99.085			
22	0.060	0.199	99.284			
23	0.048	0.160	99.444			
24	0.042	0.141	99.585			
25	0.034	0.112	99.697			
26	0.027	0.091	99.789			
27	0.023	0.077	99.865			
28	0.017	0.056	99.921			
29	0.012	0.040	99.961			
30	0.012	0.039	100.000			

Note: Extraction method: Principal component analysis

4.5. Regression Model

Regression model shows the relationship between dependent variable and explanatory variables. The study used pairwise regression model, therefore, four model has been used, and each model include one more variable in the subsequent models. Table 14 shows the goodness of fit of the model.

In Table 14, R^2 tells the "goodness of fit" of the model. It serves as a percentage. Our R^2 in Model 1 is 0.196, which means that the X variable can explain about 19.6% of the change in Y. R^2-square in the Model 2 is 0.208, which means that the X variable can explain about 20.8% of the change in Y. While R^2 in this Model 3 is 0.222, which means that the X variable can explain about 22.2% of the change in Y. Whereas R^2 in this Model 4 is 0.326, which means that the X variable can explain about 32.6% of the change in Y. The adjusted R^2 value is <50%, it mostly presented in behavioral studies where the respondents are rational and their responses mostly deviated beyond the mean values of the questions. The overall results show that the Model 4 has a high value of R^2, that we are good enough to explain the variables in the next subsequent tables 4.37 and 4.38 respectively. Table 15 shows the stability test by ANOVA.

The ANOVA shows that the model has predictive value, since it is significant, therefore, all four model shows that there is no problem of model stability, as the critical value is <0.05% level of significance. Table 16 shows the regression coefficients in all four models.

Table 16 shows that all of the significance levels are <0.05, so they are all significant. Model 1 shows that IEMP is a significant and positive relationship with the IEM, as it is significant at 1% level. In addition, Models 2, 3 and 4 shows that all variables are significantly explained the dependent variable, however, the direction of coefficient vary as per the nature of the variables characteristics. As RP and ICP have a negative relationship with the IEM, while remaining variables i.e., IEMP and CP has a significant and positive relationship with the IEM. RP, and ICP significantly declined the IEM, while IEMP and CP increase along with the increase in IEM.

5. CONCLUSION

In the light of analysis it was concluded that nearly all the statements were accepted by the respondents, as majority of respondents agreed that EMPs are important to compete in this competitive world. It was further found that perceived RPs have a statistically significant impact on the adoption of EMPs.

Our empirical analysis highlights the factors that serve as force for greening of firms, as measured by their adoption of EMPs. Factors such as RPs, investor pressures, customer pressure and CPs are significant in motivating corporations to adopt the EMPs. The research consistent with the previous studies of Kolk et al. (2001) and Cormier et al. (2004) i.e., most of the firms adopted

Table 11: Component matrix[a]

Q.No.	Component				
	1	2	3	4	5
Q001		0.482			
Q002		0.673			
Q003		0.723			
Q004	0.454				
Q005	0.489				
Q006					−0.442
Q007					−0.537
Q008	0.636				
Q009	0.748				
Q010	0.791				
Q011	0.574				
Q012	0.641				
Q013	0.702				
Q014	0.620				
Q015	0.658				
Q016		−0.673			
Q017		−0.686			
Q018		−0.603			
Q019			0.562		
Q020			0.616		
Q021			0.653		
Q022		0.490			
Q023		0.550		0.0741	
				0.655	
Q024					
Q025					
Q026			−0.740		
Q027				−0.702	
Q028	0.674				
Q029	0.722				
Q030	0.734				

Note: The values show factor loadings that calculated on the basis of factor analysis.

EMPs in order to meet stave off intensified government scrutiny or to follow stringent regulations by the government.

The analysis of study, therefore, further underscores the IEM and IEMP by firms. This finding motivates incentives for firms to adopt cost-effective approaches to improve environmental management. Siddique et al. (2013) also apprehended the IEM and its practices.

Like Fogler and Nutt (1975) and Rockness et al. (1986), various studies have identified no significant link between adoption of EMPs and profitability. Similarly negative relationship was found between environmental performance and corporate disclosure practices by Freedman and Jaggi (1982). Contrary to it, few researches have shown that adoption of EMPs improved profitability and reduced risks. Bragdon and Marlin (1972) and Spicer (1978) likewise in our analysis of the results indicate a significant level of relationship

Table 12: Descriptive statistics

Variables	*N*	Minimum	Maximum	Mean	Standard deviation
IEM	420	2.20	5.00	4.2710	0.57157
IEMP	420	1.33	5.00	4.3492	0.49675
RP	420	1.67	5.00	3.7258	0.75631
ICP	420	2.00	5.00	3.6746	0.82871
CP	420	2.50	5.00	4.0508	0.57314
Valid *N* (listwise)	420				

IEM: Importance of environmental management, IEMPs: Implementation of environmental management practices, RP: Regulatory pressure, ICP: Investor and customer pressure, CP: Competitive pressure

Table 13: Correlation matrix

Variables	IEM	IEMP	RP	ICP	CP
IEM					
Pearson correlation	1	0.444**	0.114*	−0.122*	0.439**
Significant (two-tailed)	0.000	0.000	0.020	0.013	0.000
N	420	420	420	420	420
IEMP					
Pearson correlation	0.444**	1	0.490**	0.048	0.229**
Significant (two-tailed)	0.000	0.000	0.000	0.322	0.000
N	420	420	420	420	420
RP					
Pearson correlation	0.114*	0.490**	1	0.156**	0.039
Significant (two-tailed)	0.020	0.000	0.000	0.001	0.421
N	420	420	420	420	420
ICP					
Pearson correlation	−0.122*	0.048	0.156**	1	−0.408**
Significant (two-tailed)	0.013	0.322	0.001	0.000	0.000
N	420	420	420	420	420
CP					
Pearson correlation	0.439**	0.229**	0.039	−0.408**	1
Significant (two-tailed)	0.000	0.000	0.421	0.000	0.000
N	420	420	420	420	420

**Correlation is significant at the 0.01 level (two-tailed).* Correlation is significant at the 0.05 level (two-tailed). IEM: Importance of environmental management, IEMPS: Implementation of environmental management practices, RP: Regulatory pressure, ICP: Investor and customer pressure, CP: Competitive pressure

Table 14: Model summary – Goodness of fit of the model

Model	*R*	R^2	Adjusted R^2	SE	Change statistics					Durbin–Watson
					R^2 square change	*F* change	df1	df2	Significant *F* change	
1	0.444(a)	0.197	0.196	0.51266	0.197	102.825	1	418	0.000	
2	0.460(b)	0.212	0.208	0.50872	0.014	7.509	1	417	0.006	
3	0.477(c)	0.228	0.222	0.50412	0.016	8.640	1	416	0.003	
4	0.571(d)	0.326	0.320	0.47146	0.098	60.645	1	415	0.000	1.915

Table 15: ANOVA – Model stability test

Model	Sum of squares	Df	Mean square	*F*	Significant
1					
Regression	27.025	1	27.025	102.825	0.000[a]
Residual	109.861	418	0.263		
Total	136.886	419			
2					
Regression	28.968	2	14.484	55.967	0.000[b]
Residual	107.917	417	0.259		
Total	136.886	419			
3					
Regression	31.164	3	10.388	40.875	0.000[c]
Residual	105.722	416	0.254		
Total	136.886	419			
4					
Regression	44.644	4	11.161	50.213	0.000[d]
Residual	92.242	415	0.222		
Total	136.886	419			

[a]Predictors: (Constant), IEMP, [b]Predictors: (Constant), IEMP, RP, [c]Predictors: (Constant), IEMP, RP, ICP, [d]Predictors: (Constant), IEMP, RP, ICP, CP, [e]Dependent variable: IEM. IEM: Importance of environmental management, IEMPS: Implementation of environmental management practices, RP: Regulatory pressure, ICP: Investor and customer pressure, CP: Competitive pressure

Table 16: Regressions coefficients

Model	Unstandardized coefficients		Standardized coefficients	*t*	Significant	Collinearity statistics	
	B	Standard error	Beta			Tolerance	VIF
1							
(Constant)	2.047	0.221		9.277	0.000		
IEMP	0.511	0.050	0.444	10.140	0.000	1.000	1.000
2							
(Constant)	2.097	0.220		9.543	0.000		
IEMP	0.588	0.057	0.511	10.250	0.000	0.760	1.316
RP	−0.103	0.038	−0.137	−2.740	0.006	0.760	1.316
3							
(Constant)	2.383	0.238		9.991	0.000		
IEMP	0.583	0.057	0.507	10.242	0.000	0.759	1.318
RP	−0.086	0.038	−0.114	−2.285	0.023	0.742	1.348
ICP	−0.088	0.030	−0.128	−2.939	0.003	0.974	1.026
4							
(Constant)	1.005	0.285		3.530	0.000		
IEMP	0.476	0.055	0.413	8.654	0.000	0.711	1.406
RP	−0.080	0.035	−0.106	−2.266	0.024	0.742	1.348
ICP	0.014	0.031	0.021	0.456	0.649	0.799	1.251
CP	0.356	0.046	0.357	7.788	0.000	0.771	1.296

[a]Dependent variable: IEM. IEM: Importance of environmental management, IEMPS: Implementation of environmental management practices, RP: Regulatory pressure, ICP: Investor and customer pressure, CP: Competitive pressure

existing between EMPs and its forcing factors for adoption of EMPs. Factor analysis shows association between IEMP factor and CPs with the value of 0.229 that was moderate.

The regression analysis shows the significance levels which are <0.05, so they are all significant. Model 1 shows that IEMP is a significant and positive relationship with the IEM, as it is significant at 1% level. In addition, Models 2, 3 and 4 shows that all variables are significantly explained the dependent variable, however, the direction of coefficient vary as per the nature of the variables characteristics. Previous researches by Cohen et al. (1995) and Hart and Ahuja (1996) that find a positive relationship between EMPs and environmental management.

Analysis of the current study was based on data obtained from firms located in the Southern Punjab but further studies should be encouraged taking sample from different national firms. We have focused on few forces for adoption of proactive EMPs like; RPs, investor pressures, customer pressure and CPs. However, some other driving forces like interest groups, political factors, profitability, and media exposure may also be considered for further researches.

The study did not examine its implications for economic or environmental performance of firms. An improved outcome for society and firms in result of adoption of EMPs is an important area for future studies.

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