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### **Statistical Energy Consumption Data of Indian Firms: Would Shareholders Agree?**

The main queries of the issue are the “ What would be the best way to report financial data for the firm in an energy audit report?” and “ How should BEE report and classify firms with respect to fractional energy costs?”. There is a well-known saying that

“ WE can take a horse to the pond, but we can’t make it to drink if it doesn’t feel thirsty”. Similarly we can’t enforce an industry to cut down energy costs unless otherwise it is beneficial to the industry. So energy conservation act 2001 should force an industry to make more profits by cutting down the energy costs. So marketing energy conservation should be based on the principle “ X% of energy cost reduction implies Y% increase in profit”. This marketing principle makes the industries to follow energy conservation/energy efficiency schemes own heartedly thereby reducing the energy. However **“how to define fractional energy costs?” is a debatable topic.**

In an industry, energy costs can be expressed as % of,

- a) Production cost i.e. manufacturing cost
- b) Total sales
- c) Annual turn over
- d) Profit (before tax)

Fractional energy costs can be expressed with reference to any one of the above factors. In terms of marketing energy efficiency and to encourage industries it would be better to express energy costs as fraction or multiplier of profit before tax. **But however this has one disadvantage that when profits of an industry are more, then fractional energy costs based on profits will not be reflected as a high even though energy costs are high.** So if BEE classify firms with respect to fractional energy costs, then there will be chance of excluding the energy intensive industries whose energy costs are more and at the same time earning more profits due to any reasons. Hence the very purpose of BEE to concentrate more on energy intensive industries may be deviated. The argument that energy efficiency can not be sold to industries where profits are already high can not be justified. **In my opinion energy conservation/energy efficiency measures should be adopted in an industry where its energy costs are high irrespective of the profits earned.** The assumption that management of highly profits earning industry may not agree to invest to reduce energy costs may not be correct all the times, as now a days due to globalization most of the industries are willing to adopt methods to reduce the production costs to compete with international market. Hence industries are looking for long living strategy in market rather than transit profits. Even shareholders are wise and can understand the necessity of the reduction of manufacturing costs by implementing the energy efficiency measures. It is the responsibility of the energy manager to make the management to feel thirsty for energy efficiency measures. I feel dual indicators representation i.e.

- a) Fractional energy costs based on production cost
- b) Fractional energy costs based on profit is the best way to report financial data for the firm in an energy audit report

Based on the dual indicators representation industries can be classified in to following four groups for analysis purpose.

Group	Fractional % energy costs based on production cost	Profits	Fractional % energy costs based on profits	Selling factor for energy efficiency
A	High	Low	High	Highest
B	Very high/ High	High	Medium to high	High
C	Low	Low	Medium to low	Medium to low
D	Low	High	Low	Low

Group A is a high % of fractional energy cost based on manufacturing costs combined with indicator of fractional energy cost based on profit. This group is the most attractive group where energy efficiency can be sold easily and management own heartedly agrees for energy conservation measures. **Hence selling factor for energy efficiency is highest in this case.**

Group B is an industry where fractional energy cost based on production cost is very high and at the same time profits are also high. **In this case if fractional energy costs based on profits alone are taken, then this will not attract the BEE/ shareholders to emphasis energy conservation measures.** When combined with fractional energy costs, based on the production costs, as the % is high, this definitely gives a scope for reduction in energy. So this group also prefers to invest in energy efficiency measures, as the scope for energy reduction is high which leads to reduction in production costs hence unit price. This gives an added advantage of increase in sales in global market and hence further profits. **Hence selling factor is also high in this case.** Shareholders also welcome this investment. **This is clearly supporting the basis for dual indicators representation.**

In class C due to the profits are low, even though energy levels are low, management may try to increase the profits by reducing energy costs. Industries opt for the energy costs reduction to increase their profits for survival. **In this case the selling factor for energy efficiency is medium to low.** Role of BEE, energy managers & auditors is vital in this case to convince the management to go for energy efficiency measures.

**Class D doesn't attract any marketing for energy efficiency** as the profits are high and fractional energy costs are low.

So BEE can classify the firms as groups A, B, C& D and marketing for energy efficiency is in the descending order from group A to D as the scope for energy reduction is more in groups A & B. BEE should pay attention on these firms for selling energy efficiency.

In all these classes we can express the % increase in profits with % reduction in energy costs to attract management and share holders.

% Increase in profits with % reduction in energy costs can be arrived as follows.

- a) When expressed fractional energy costs based on profit:
  - %X = % Reduction in energy costs
  - %PE = fractional energy costs based on profit
  - %Y = % Increase in profit
  - Then % Y= (%X) x (% PE)
- b) When expressed fractional energy costs based on production cost:
  - %X = % Reduction in energy costs
  - %PE = fractional energy costs based on production cost
  - %Y = % Increase in profit
  - PC= production cost
  - Y = Increase in profit
  - = {( %PE) X (PC)} %X
  - %Y= (Y/P) X 100

However **in both the cases the % increase in profits is same for the same reduction in energy costs.** Hence the marketing principle “ X% of energy cost reduction implies Y% increase in profit” can be used in both the cases i.e. fractional energy costs based on either profit or production cost

With this analysis, the query and the hypothesis posed in the issue can be answered.

**QUERY: What would be the best way to report financial data for the firm in an energy audit report, taking into consideration standard reporting formats already in use where power and fuel consumption is occasionally mentioned?**

Hence in my opinion the best way is to report financial data for the firm in an energy audit report is to express fractional energy costs on dual indicator i.e. based on production cost and on profit. Hence reporting format should contain the following data.

Total production cost:

Total energy costs:

Profits before tax:

% Fractional energy costs based on production cost:

% Fractional energy costs based on profit:

% Increase in profits by reducing energy costs by X %:

Based on the above data industry can be classified as A, B, C& D as discussed above and class A & B groups can be given priority to sell energy efficiency and reduce energy costs.

**HYPOTHESIS I: In times when profits erode, firms look at their bottom line and the demand for energy cost reduction advice goes up.**

When profits erode the industries falls in either category A or C. when profits are low definitely industries choose the path to reduce the production cost by reducing the cost of production. If industry falls in category A where fractional energy costs percentage based on production cost are high, definitely industry adopts the strategy to reduce the energy costs. This helps the industries to reduce the unit price of production also in addition to increase in profits. The reduction in unit prices enhances the sales as it can compete in the global market. In the case of group C industries as the % energy costs are not high, management may not show interest to reduce the energy costs. But for the survival of the industry even in this group also, industry has to adopt the strategy to reduce the energy costs. Hence the assumption of firms accepts the demand for energy cost reduction advice goes up when profits erode is correct. However the demand for cost reduction advice goes up more in the case of group A industries rather than group C.

**HYPOTHESIS II: In times when profits erode, firms have no money to invest in energy cost cutting measures and therefore demand for energy cost reduction advice goes down.**

Energy cost reduction goes down when profits erode due to no money to invest can not be acceptable as the industry if doesn't take measures to revive finally leads to its closure. No industry prefers to die on its own. Hence management takes all efforts to enhance the profits. In the case of group A industries due to high percentage of fractional energy costs an astonishing large percentage increase in profit is generated by modest efforts in energy efficiency. Hence in this case industries will not hesitate to invest. If firms have no money to invest then they will look for the financial assistance from bank loans or by awarding the project to energy service companies. Hence the advice for energy cost reduction definitely works in the case of group A industries. However the same strategy may not be shown by industries in case of group C where % energy costs are less. In this management may look for other possibilities to reduce the cost of production to enhance the profits. Hence the statement

energy cost reduction goes down when profits erode due to no money to invest can not be acceptable in all the cases.

**HYPOTHESIS III: Firms that make lots of profit are not too interested in advice on energy cost reduction.**

Firms that make lots of profits are not interested in energy cost reduction is correct in the case of group D industries where fractional energy costs based on manufacturing costs are low & profits are high. But this cannot be the case in case of class B industries where fractional energy cost based on manufacturing cost is high. As the lot of potential is there for reduction of energy costs due to high % of energy costs, definitely industries will prefer to invest in energy reduction methods. Also as profits are high there will not be any resources constraint. As reducing energy costs leads to further reduction in production cost, in turn unit price of the product, shareholders also welcome the cost reduction advice. Hence the classification of industries on dual parameter basis can be appreciated in this case as it identifies the industries where energy efficiency can be sold even though energy costs based on profits are not high. Hence the assumption that industries that make lot of profits will not show interest in energy efficiency is not correct in the case of group B.

Based on this also we can say that dual representation as suggested is the best method to report financial data for the firm in an energy audit report.

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