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Firms are developing new managerial approaches to deal with the growing public alarm over environmental degradation, as well as the regulatory, consumer and technological challenges that result from this degradation. The neoclassical model of the firm that underlies the environmental thinking of most economists cannot adequately explain firm behavior. This paper develops a socio-economic model of the "human firm" that incorporates managerial, social, environmental and ethical realities not found in the neoclassical model. The paper focuses on the pollution aspects of environmental problems that are by-products of the production and consumption of firms' goods and services.

The Neoclassical Model of Firm Behavior

The neoclassical model of the firm assumes that the firm is perfectly knowledgeable about alternative courses of action and that it maximizes profits. The profit maximizing assumption means that firm behavior depends on economic incentives, which derive from the product and resource markets in which the firm participates, and from regulators who attempt to modify the firm's behavior. The latter do this because firms may act in a manner that creates negative externalities. Firm behavior with respect to the natural environment is, therefore, seen simply as reactions to market and regulatory incentives, unrelated to the character or quality of particular firms, or to society's influence.

Managerial Approaches to the Environment and Changing Realities

Traditionally, problems of pollution have been dealt with by disposing of pollutants with an "out-of-sight, out-of-mind" perspective. This has meant attempting to conform to environmental standards merely by adding equipment to existing production processes at the lowest possible costs. Traditional managerial thought has been opportunistic and oriented to the short term in its decision making.

However, new realities confront management today, including:

1) the alarm of the public at the level of environmental degradation, and increasing support for environmental protection efforts;
2) the ability of the environmental movement to create coalitions that seek technically and politically feasible solutions to various environmental issues;

3) the government's requirement that companies meet increasingly stringent environmental standards;
4) the preference shown by consumers and consumer groups towards environmentally friendly products; and
5) the development of new technologies that avoid pollution.

These new realities have given rise to new managerial approaches. Environmental management is now recognized as a separate field by both businesses and universities. Environmental goals are being integrated into the overall strategies of companies in an attempt to harmonize environmental and economic goals. Companies are realizing that "pollution prevention pays." Operations are becoming cleaner and cheaper. While not all companies have made the shift, the new environmental realities have resulted in managerial approaches that are long term, rational, nonopportunistic and responsible.

A Socio-Economic Model of the Human Firm's Environmental Behavior

The new behavior of firms described above indicates a failing of the neoclassical model. The environmental behavior of firms is not simply a response to market or regulatory incentives, but could be consciously chosen behavior that goes beyond the interests of firm owners. Such behavior cannot be accounted for by the neoclassical model. A model of the firm is needed that incorporates managerial, social, environmental, ethical and economic considerations, and that has clear alternative policy implications.

As in the neoclassical model, firms in the socio-economic model are affected by market and regulatory incentives, as well as by the existence of market failures that offer economic incentives to pollute the commons. However, the socio-economic model incorporates five additional factors that determine the firm's ability to improve the environment, taking into account the macro and micro social influences and regulatory effects that encourage or discourage the firm from undertaking environmental activities. These factors are as follows:

1) **Environmental Opportunities:** These are known or knowable developments that the firm can utilize to reduce environmental impacts. The opportunities to improve the environment may be either in the manufacturing process or in providing consumers with environment-friendly products.

2) **Internal Organizational Capabilities:** There are six internal organizational capabilities that determine how a firm responds to the opportunities and incentives confronting it:

a) the ability of the firm to incorporate environmental considerations into other aspects of the company's operations;
b) the ability of firms to make rational decisions: The socio-economic model assumes that firms are boundedly rational. Firms can improve the rationality of their environmental decision making by investing in organizational capital.
c) the ability of the firm to be socially responsible: The social responsibility of a firm depends on its ethical standards and its willingness to make short-term sacrifices for long-term gain. The level of social responsibility of firms can range from firms that are

opportunistic and oriented toward the short-term to highly patient and ethical firms that act in ways that transcend their self-interest.

d) the ability of firms to envision and carry out change: This capability is called entrepreneurship.
e) the capacity of the firm for organizational learning;
f) the firm's level of environmental concern and awareness.

3) **Macro Social Forces:** Community and societal influences that reflect public concerns, societal goals and demands, and society's support for environmental improvements can all influence firm behavior.

4) **Extra-Firm Institutions and Infrastructures:** There are micro forces that influence a firm's environmental behavior, including educational institutions, trade associations, consultants, the firm's suppliers (including its suppliers of pollution control technology), lawyers and lobbyists, and standard industry and managerial practices.

5) **Other Regulatory Influences:** Some regulatory administrative operations may have undesirable effects on firms' environmental behavior due to unintended social and economic consequences of the regulatory operations.

Thus, in the socio-economic model of the firm, a firm's behavior is determined by its internal organizational capabilities and the external social and regulatory influences upon it. Pollution is a product not only of market failures, but also of insufficiently developed firms and a lack of appropriate social and regulatory support.

Implications for Government Policy

The main implications of the socio-economic model for government policy are that it should:

1) encourage the development of firms' internal organizational capabilities;
2) provide firms with knowledge of environmental opportunities or opportunities to learn about them;
3) identify and reduce the undesirable micro social influences emanating from extra-firm institutions and infrastructures, and strengthen the desirable influences; and
4) identify and reduce the undesirable, unintended influences from regulators' administrative operations.