

# Social Responsibility in New Technology Firms: The Executive View

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## Abstract

*The study presents the results of a survey designed to identify the social responsibility of chemical, computer, and pharmaceutical firms. The approach to measuring social responsibility is based on the framework set forth by Sethi (1979) in which operating strategies of firms are indicators of their social responsibility. Examining new technology assessment as an operating strategy, the study found that responding firms react much more to social obligation (accountability) than to social responsiveness (anticipating social norms).*

## Introduction

Sethi (1979) associates firms' operating strategies with dimensions of social performance: social obligation, social responsibility, and social responsiveness. Social obligation implies that the operating strategy of the firm responds solely to market forces or to legal constraints. Social responsibility implies that the firm may be expected to exhibit behavior "... where it is in congruence with currently prevailing social norms, values, and performance expectations"(p.66). And social responsiveness implies that the firm goes beyond expectations to anticipate the effects of its actions on society and to see trends in social norms.

Surveys of attitudes of corporate executives toward social responsibility have been undertaken in the past which may give a sense of where firms lie on Sethi's (1979) social performance continuum. These surveys have found widely inconsistent results. For example, the results of Holmes (1975) and Cox (1982) would place firms on opposite ends.

Holmes (1975) first explored executives' attitudes toward balancing social responsibilities with profit obligations. She found that only a minuscule proportion felt that business' responsibilities ended with earning a profit and operating according to the law. Most responding executives believed that helping to solve social problems was a legitimate activity of business

even if no profit could be seen for the action either in the short-term or long-term.

In contrast, Cox (1982) concluded that U.S. firms are not even close to accepting the contemporary definitions of social responsibility. In fact, he wrote that the executives lack connectedness with the "whole human, interpersonal webwork" (p. M-62). According to Cox's results, executives are still trying to sort out how the firm fits into the world. As high as one-third of the executives thinks that creating jobs is of little or no importance to the firm. Few feel that their firms put very much or most importance on improving the quality of life in society.

Holmes' (1975) and Cox's (1982) survey results on corporate social responsibility have very different implications for business' role in society, and hence place firms at different points on Sethi's (1979) social performance continuum. Holmes' study shows that attitudes of executives toward social responsibility have changed over time and that they view these activities as valuable to the firm - social responsiveness. Cox, on the other hand, reveals executive perceptions of the firm as a purely economic unit isolated from responsibility for society - social obligation.

While previous surveys have sought executives' attitudes on the firm's role in social re-

sponsibility and on their particular firm's achievement of social responsibility, this study will seek attitudes from a very different perspective: the firm's decision making processes. Probing an organization's decision making process has long been recognized as a useful approach to assessing its social responsibility (1975). It is more closely tied to a firm's operating strategy consistent with Sethi's (1979) performance continuum. And, it eliminates the bias introduced from straightforwardly asking executives how socially responsible their firms are. Although there are advantages to linking organizational strategy and social/ethical orientation, it is still considered a radical approach (1988).

This study will present the results of a survey where responding executives' views toward social responsibility are inferred from the opinions expressed in their investment decision making processes. The results will be used to suggest a placement of the firms on Sethi's social performance continuum.

According to Sethi's (1979) model, in order to fit into the socially responsible or into the socially responsive dimension of corporate performance, a firm would at least need to internalize its costs in the investment decision making process and to maintain current environmental standards. Therefore, a socially responsible firm introducing new technology would perform a comprehensive technology assessment; that is, the social and environmental impacts would be included in the capital budgeting procedure.

This study will explore corporate executives' perceptions on the feasibility of assessing the social and environmental impacts of new technology, and the firm's emphasis on the assessment in investment decision making. The study will also seek executives' opinions on the roles played in technology assessment by three key external groups: the public, the government, and insurance firms. Implications of these views for social responsibility then will be proposed.

## Method

### *The Sample*

The study focused on firms in three industries - the chemical, the computer, and the pharmaceutical. The three industries were selected

because of their heavy involvement in producing new technology: the chemical industry has health and environmental impacts; the computer industry has social impacts; and the pharmaceutical industry has health impacts.

A survey was mailed to 500 firms in January 1985. Within each industry the firms were selected randomly from *Standard and Poor's Register of Corporations, Directors, and Executives* (1984). In addition, all firms in *Standard and Poor's* which were also on the COMPUSTAT tape were sampled on a 100% basis. Although mailed to Chief Executive Officers, the survey was of such a detailed nature that the CEOs were asked to direct the survey to the highest ranking organizational officer involved with strategic investment decisions. The executives' positions, of course, varied from firm to firm, but included such titles as Vice President of Engineering, Vice President of Research and Development, and Director of Planning. According to Hambrick and Mason (1984) and Schwenk (1988) organizational decisions are reflective of the views and values of key decision makers, such as the respondents to this survey. Hence, the attitudes collected from these key decision makers should reflect the attitudes prevailing in the firm. Even in absence of common organizational attitudes, the views collected in this study would be relevant since the top management exerts the highest level of influence on strategic decisions (1986).

The overall response rate was 15.3%, or 75 surveys, from a total of 489 (11 were not deliverable). The response rate was somewhat low possibly due to (1) the detailed nature of the survey, and (2) the sensitivity of some of the issues raised.

### *Variables Examined*

Three variables were measured. First, feasibility and emphasis were chosen because of their possible interrelationship. Assessing the social and environmental impacts of new technology may only be emphasized in the decision making process if the assessment is feasible. The third variable in the study concerned executives' views toward stakeholders.

The first variable measured the feasibility of assessing the social and environmental impacts

of new technology prior to its introduction into the marketplace. Feasibility refers to the perceived ease with which the impact may be analyzed. Impacts which have been studied with well-accepted analytical techniques are more feasible than those which have no accepted techniques. Eight impact areas were included which cover major social and environmental concerns - employment, crime, poverty, health, education, standards of living, environment, and efficient use of resources. The selection of these eight areas was the result of a Delphi study conducted prior to the construction of the survey instrument.

The second variable was included to determine the extent to which firms emphasize in their investment decision making any of the eight impact areas addressed in the first variable.

The third variable sought views on three external stakeholders in technology and technology assessment -- the public, the government, and insurance firms. The public is important in that it may initiate lawsuits against firms and create political forces to which the government may react. The government has the power to enforce behaviors on the firm which may not be in the firm's self-interest. And insurance firms provide certain levels of protection when unforeseen social and environmental impacts occur from new technology products.

The questions concerning the public were to ascertain whether executives understand that the public's perception of risk is different from the experts' perception (1980). Only by recognizing that the public responds to the risk of technology using very different factors than the experts and by learning to communicate with the public from its perspective may the firm minimize the political force of the public against the firms' technologies. Because the government is the primary agent to impose regulations and sanctions against the technologies of firms, executives' attitudes about the government's involvement was sought. Insurance firms perhaps represent one of the few stakeholders which exists to protect the firm when the technology has adverse effects. Hence, statements were included to measure the executives' attitudes on the performance of their insurance firms.

### *The Analysis*

In addition to descriptive statistics on the views of the executives, three techniques were employed to analyze the results of the survey data - correlation analysis, factor analysis, and Chi-square test of homogeneity. Correlation analysis was used to measure the association between two variables, perceived feasibility of assessing social and environmental impacts of new technology with the actual emphasis given the assessment. Factor analyses were performed to identify whether responses to the feasibility and emphasis variables can be explained by a small number of hypothetical, or conceptual, variables. Chi-square tests of homogeneity were done to examine whether responses to any of the variables were significantly different across the three industries.

## **Results**

### *Feasibility of Assessment*

Table 1 provides the executives' mean perceptions of the feasibility of assessing each of the eight impact areas in their investment decision making. The results indicate that executives perceive crime and poverty as the least feasible ("slightly feasible") impacts to assess in an investment decision. The efficient use of resources (the focus of most capital budgeting procedures) is the most feasible of the impact areas, being between "moderately" to "very feasible." Employment, health, and environmental impacts are roughly "moderately feasible." Education and standards of living impacts are "somewhat feasible."

A factor analysis of the responses to the first variable revealed two useful factors. The impact areas identified with the first factor are employment, crime, poverty, education, and standards of living. The impact areas identified with the second factor are health, environment, and efficient use of resources. The two factors derived from the feasibility responses can be distinguished on the basis of accountability of the firm. Factor 1 consists of social impacts for which the firm is not accountable. Factor 2, on the other hand, contains health and environmental impacts for which the firm is accountable to various governments, to the public, and to the courts. The factor also contains efficient use of resources, which can be interpreted as the area of the firms' accountability to their stockholders. Hen-

Table 1  
Feasibility and Emphasis of Impacts in Technology Assessment As Part of the Investment Decision Process

	Feasibility				Emphasis			
	Overall Mean @	Chemical	Computer	Pharmaceutical	Overall Mean @	Chemical	Computer	Pharmaceutical
Employment	4.0	3.8	4.0	4.4	2.8	3.1	3.0	2.4
Crime	2.1	2.1	1.9	2.2	1.5	1.7	1.4	1.3
Poverty	2.1	2.4	1.9	1.9	1.5	1.8	1.3	1.4
Health	3.9 * (p=.023)	4.1	3.1	4.8	4.0 * (p=.005)	4.4	3.0	4.7
Education	3.2	2.9	3.7	3.2	2.7	2.6	2.7	2.6
Standards of Living	3.0	3.2	2.9	2.9	2.5	2.7	2.2	2.6
Environment	4.1 * (p=.006)	5.1	3.0	4.2	3.9 * (p=.005)	5.0	2.9	3.7
Efficient Use of Resources	4.4	5.0	4.0	4.3	4.4	5.0	4.0	4.2

@ Six point scale: 1 (not feasible/not emphasized) to 6 (completely feasible/heavily emphasized)

\* Significant Chi-square test of homogeneity

ce, a fundamental factor in the firms' determination of the feasibility of assessing the impacts of new technology on social and environmental areas appears to be whether the firm is accountable for those impacts or not.

Ranking the industries' mean responses (Table 1) to the feasibility of assessing the social and environmental impact areas indicates this concern for accountability. Executives in the chemical industry, where the environment is the area of greatest accountability, perceive the environmental impact assessment as the most feasible. The significant Chi-square test of homogeneity indicated that executives in the three industries perceive the environment significantly differently in how feasible it is to assess. Efficient use of resources is ranked as the second most feasible impact to assess by chemical executives indicating their accountability to stockholders.

Executives in the pharmaceutical industry see health assessment as the most feasible impact area, also consistent with its primary concern. The Chi-square test of homogeneity indicated that the mean feasibility response to health impact assessments by the three industries significantly differed.

The computer industry has tied first rankings between employment and efficient use of resources, consistent with its accountability to stock-

holders and its perceived large social impact on employment (computers replacing people).

Executives in all three industries ranked crime and poverty, the areas for which firms are not traditionally accountable, as the least feasible areas to assess. Hence, the executives' perceptions of the feasibility of assessment appear tied to the firms' accountability for the impact. Since accountability for each industry varies to some extent, the rankings of the feasibility of the assessment also vary somewhat.

#### *Emphasis on Assessment*

The second variable in the survey measured the level of emphasis which the firm places on each of the eight social and environmental impact areas listed in the first variable. Table 1 displays the mean responses. The table clearly shows that neither poverty nor crime is emphasized to any degree in the firms' investment decision making. The most emphasized areas are efficient use of resources, health, and environment each measuring close to "moderately emphasized." Employment, education, and standards of living are all rated between "slightly emphasized" to "somewhat emphasized."

The Chi-square tests of homogeneity showed two impacts where the industries differ significantly in the level of emphasis placed on new

technology assessment. The pharmaceutical industry emphasizes health more than the chemical industry which in turn emphasizes it more than the computer industry. On the other hand, the chemical industry emphasizes environmental impacts to a greater degree than the pharmaceutical and the computer industries. Again, these results appear consistent with areas of greatest accountability.

The results of the first and second variables appear very similar. Indeed, a factor analysis uncovered the same fundamental force behind the level of emphasis an impact area received in investment decision making and the feasibility of technology assessment: accountability.

Moreover, with one exception, the correlations between the feasibility of assessing an impact and the amount of emphasis given to that impact in the investment decision are strong and significant at the 0.0001 level. In other words, the amount of emphasis given to an impact in the investment decision is highly correlated with the feasibility of assessing that impact. Table 2 contains the correlations.

#### *Attitudes Towards Stakeholders*

The public, the government, and insurance firms are all external stakeholders in the use, monitoring, or insuring of new technology produced by business. The third variable sought the attitudes held by the executives on these stakeholders. The mean responses to the statements are shown in Table 3.

Statements focused on the public indicate that the executives believe that the public overreacts to technology accidents and finds the products more dangerous than they really are. The executives somewhat concede that projected death rates are not sufficient to indicate the danger of the product and that more studies into the public's perception of risk may be useful to firms producing new technology products. Responses to the statements on the government as a stakeholder in the new technology area indicate that executives in all three industries "slightly agree" to statements on the public's over-reliance on the government and on the complexity of government regulation. The executives disagree very "slightly" with the statement that the government will broaden its new technology sphere of in-

fluence to include technology's social impacts. The responses to the insurance statements hover around neither agree nor disagree possibly indicating the executives' uncertainty or lack of familiarity with risk management issues.

Executives' attitudes toward the key external stakeholders may reveal information relevant to the prior two variables. The Chi-square tests of homogeneity indicate that the industries are not homogeneous with respect to two statements about the public. Executives in the chemical industry clearly perceive the public as more fearful of its technology than either of the other two industries. This may explain industry differences in the second significant statement - the chemical industry sees a need for more public risk perception studies than the other industries. The Chi-square tests of homogeneity did not identify any statements about the government or about insurance firms where industry mean responses significantly differed.

#### **Discussion**

New technology assessment is the measurement of the impact of a new technology on society and on the environment prior to introducing the technology. As such, it is really an issue of social responsibility. As an operating strategy, the technology assessment can be matched with Sethi's (1979) social performance dimensions. Firms' operating strategies can be described as responding only to market forces or to legal obligation (social obligation); as consistent with current social norms and values (social responsibility); or as anticipatory of its actions on society and of the trends in social norms (social responsiveness). The survey results suggest that, taken as a whole, executives' perceptions in the three new technology industries fall closer to the "social obligation" end of Sethi's continuum.

Given the high correlations between the feasibility and the emphasis variables (Table 2), it would be tempting to conclude that the feasibility of assessment, or the ease with which impacts may be assessed, is the driving force behind whether or not an impact area is emphasized in the investment decision. Despite expenditures of large resources and the most favorable of social intentions, the firm can assess only those impacts which are possible to assess.

Table 2

Correlations Between the Feasibility of Assessing New Technology with the Emphasis Given Technology Assessment in the Investment Decision

<u>Impact</u>	<u>Correlation Coefficient</u>
Employment	0.276
Crime	0.616 *
Poverty	0.594 *
Health	0.743 *
Education	0.715 *
Standards of Living	0.608 *
Environment	0.756 *
Efficient Resource Use	0.646 *

\* Significant at the 0.0001 level.

Table 3  
Attitudes Towards Key External Stakeholders

<u>PUBLIC</u>	<u>Overall Mean @</u>	<u>Chemical</u>	<u>Computer</u>	<u>Pharma- ceutical</u>
o Over reacts to accidents associated with technology	4.5	4.9	4.1	4.3
o Believes products of this industry are more dangerous than they really are	4.1 * (p=.009)	4.0	3.3	3.3
o Projected death rates are not an adequate measure of the danger of a product #	3.2	3.1	3.6	2.9
o More studies should be done to learn how people perceive risk #	3.0 * (p=.016)	2.5	3.3	3.2
<u>GOVERNMENT</u>				
o Public relies on the government too much	4.0	4.0	3.7	4.4
o Government regulation is too complex to stay in compliance	3.9	4.3	3.5	3.9
o Gov't regulations will broaden to include public impacts #	3.3	3.2	3.3	3.4
<u>INSURANCE</u>				
o Insurance firms have not properly estimated the risks of this industry's products #	3.4	3.3	3.3	3.6
o The firms should expand the types of coverage they offer	3.7	4.1	3.7	3.3
o Insurance firms place too many requirements before issuing coverage	3.4	3.4	3.4	3.5
@	Six point scale: 1 (strongly disagree) to 6 (strongly agree)			
#	Reverse scale item			
*	Significant Chi-square test of homogeneity			

The employment impact, however, provides a clue that feasibility may not be the correct causal link. It was the only impact with no significant correlation between feasibility and emphasis. Impacts on employment were judged to be feasible to analyze yet were not for other reasons. Since firms have not historically been accountable for the employment impacts of their technology, accountability may be a better explanation for which impacts are assessed in the investment decision. Factor analyses (with the accountable impacts of health, environment, and efficient use of resources loading together) also suggested that accountability may play a role in explaining emphasis in assessment. If accountability is the reason why new technology firms assess technology for certain types of impacts, then the firms are responding from social obligation, as defined by Sethi (1979).

There appear to be relationships among the feasibility of assessment, the emphasis given assessment, and the accountability of the firm for causing such an impact. If causation does exist among the variables, it is not clear which

direction the causation works. It may be that accountability for an impact provides the incentive to emphasize it which, in turn, affects the executives' perception of the assessment's feasibility. For example, if the firm is legally liable for environmental impacts, then it must emphasize these impacts. Therefore, it must determine a method to assess the impacts, making assessment feasible. Alternatively, accountability may directly affect the perceived feasibility of assessment. Then the more feasible an assessment appears, the more emphasis is given to the impact in the investment decision making.

Regardless of the direction of causality, if any, the implication of the relationships of the three variables is the rarity of finding a firm which can be classified as Sethi's (1979) socially responsive firm. If firms respond only to accountability, then they will not be anticipating and responding to the trends of social norms. Instead, firms will demonstrate social obligation, or responding to legal and market forces, as shown in this survey.

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