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Influences on Corporate Executive Decision Behavior in Government Acquisitions

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Abstract

This paper presents extensive exploratory research which had as its primary objective, the discovery and determination of major areas of concern exhibited by U.S. corporate executives in the preparation and submittal of proposals and bids to the Federal government. The existence of numerous unique concerns inherent in corporate strategies within the government market environment was established. A determination of the relationship of these concerns to each other was accomplished utilizing statistical factor analysis techniques resulting in the identification of major groupings of management concerns. Finally, using analysis of variance, an analysis and discovery of the interrelationships of the factors to corporate demographics was accomplished.

The existence of separate and distinct concerns exhibited by corporate executives when contemplating sales and operations in the government marketplace was established. It was also demonstrated that quantifiable relationships exist between such variables and that the decision behavior exhibited by the responsible executives has an interrelationship to their company's demographics.

Introduction

U.S. corporate executives must deal with numerous issues when considering proposal and bid responses to the solicitations issued by the Federal government. To establish the existence of particular major governmental acquisition environmental factors, the corporate executives who are responsible for their organizations' proposals were asked to evaluate the extent to which various environmental concerns affected their decision behavior relative to their strategy in responding to government solicitations. Subsequently, a thorough review and assessment of the concerns inherent in the proposal strategies within the applicable environments has been accomplished with the objective of determining the relationship of these major tactical concerns and the interrelationship of the concerns to the company's operating environment.

Review of the Procedures

The approach utilized in the research presented in this paper incorporated four standard techniques. First, an extensive literature search was conducted. The purpose of this literature search was to 1) determine the extent to which previous researchers and writers had addressed the subject, 2) identify the possible existence of unique corporate executive concerns in the subject area, and 3) establish the basis for additional research to be conducted in the subject area to further establish the validity of the hypotheses and the corollaries of this research project.
The second step was based on the findings of the literature search; i.e., a survey instrument was developed (Williams, 1978) to determine the extent to which the specified individual criteria affected the decision behavior of corporate executives responsible for government solicitations. This primary research was intended to accomplish two things. First, it was intended to substantiate the findings of the literature search so that the responses to the specified criteria would rate the extent to which each individual criterion entered into the responsible executive's decision behavior. This was accomplished by allowing responses of very weak to very strong; thus, a de facto declaration by the respondent of the significance placed on the individual criterion. Secondly, the returned survey instruments provided the basis for factor analysis and analysis of variance required to establish the existence or non-existence of significant interrelationships between the variables, and between the variables and the demographic criteria.

The third procedure applied to this project was a statistical analysis procedure called factor analysis. The principal factor analysis procedure with varimax orthogonal rotation was selected as an appropriate technique for this project; because, the procedure is one which provides for the determination of the existence, or non-existence of homogeneous characteristics having influence on the decision behavior of corporate executives. The factor analysis procedure actually forms combinations of variables which have linear relationships. These clusters of variables are grouped such that they can be identified as an individual factor which explains as much of the variance of all of the original member variables as possible. Thus, each identified factor becomes nothing more than a global variable which is representative of the variables having a significant correlation. It is through the identification of these global variables that the overall solicitation review process by corporate management may, potentially, be simplified.

The fourth step undertaken in this research project was designed to establish the existence, or non-existence of differences in the interrelationship of the factors previously identified and the demographic data of the companies of the responding executives. In order to accomplish this task, an analysis of variance procedure, utilizing the Duncan procedure, was accomplished wherein each factor was analyzed against each possible response of each demographic variable in order to determine the existence of any significant differences in each demographic criterion's possible responses. In this manner, a determination of the existence of differences in the interrelationships of the factors and the demographic data was established.

Existence of Individual Criteria

The premise of the null hypothesis was that corporate executives responsible for government proposal opportunity decisions do not have separate and distinct concerns, relative to the impact of government contract requirements on their corporate environment, which affects their decision behavior. However, after an extensive literature search, it began to appear that this was not the case at all. Rather, executive managers have numerous identifiable concerns when addressing the government's solicitations.

Starting with the manager as an individual, there exists a large literature base which recognizes that the individual is motivated at several levels. After satisfying his basic needs, such as food, shelter, and safety, the individual manager seeks a higher level of satisfaction which can not necessarily be achieved with money; (the common denominator for acquiring lower need satisfaction.) Instead, the executive receives satisfaction of the higher needs through successful negotiation of personal challenges and the interpersonal process. Further, it appears, these challenges are the primary motivator of the individual executive, not the opportunity for money; rather, the opportunity to accept and succeed in the face of manageable risks and new technological frontiers (Lawler, 1973). This being the case, the obvious question has to be how does one motivate a company; or more succinctly, how does the government motivate its contractors? After all, the companies are led by the corporate executives who are motivated by reasonable compensation.
The government's historical approach, by policy, to resolving this question has been, and is, to provide financial rewards sufficient to attract the best corporate capabilities and stimulate efficient contractor performance (FAR, 1984). However, independent studies have shown that behavioral assumptions associated with competition are not valid. Thus, it is not valid to assume that the profit motive, or theory of the firm, provides a reasonable explanation of the motivation of the government contractor, vis-a-vis the government's written position and policy premise (DeMong and Strayer, 1981). This being the case, it can be assumed that some other variable or variables provide the impetus to the decision behavior of the government's contractor executive managers.

In research and development efforts the government will often accept the risk of contract cost and completion by issuing a cost type contract. Studies have shown, in this type of risk responsibility arrangement, the strongest motivator is the contractor's own determination to successfully meet the technological challenge. Similarly, other nonprofit-maximization objectives have been shown to affect contractor executive management decision behavior. Maintaining excess staff, especially in lull periods, personal status, and personal objectives all provide incentive for government contractors and may be satisfied by the executive at the expense of profit. As long as the profit a government contractor earns is adequate, the company is in a position to secure its future by attracting investors and financing growth for the corporation, providing a means of ego-satisfaction for its technical experts, self-actualization, and self-confidence and image growth for the responsible executives (Oppedahl, 1977).

The government acquisition arena also contains disincentives for its corporate contracting partners which affect the decision behavior of the responsible executive managers. The "bureaucratic system" provides delays, excessive regulation, and uncompensated cost. Unilateral edicts and government official interferences, such as government inspectors and regulators, tend to impede the industrial processes and sap contractor resources. Some programs, however, are not seen as quite so negative. Though they may be costly, socio-economic programs have their place in a corporation's operating policy.

Socio-Economic Regulations. The Congress has declared that the government shall provide aid and other assistance to small business concerns in order to preserve the competitive enterprise and environment. This policy includes limiting certain identified acquisitions to only small businesses. This kind of limitation makes the decision process easy for large corporations' executives; they can not submit an offer in response to the solicitation. However, in some cases, large corporations are required to include plans and implement policies which actively seek small businesses as subcontractors on the company's contracts. This can be costly and further compound the complexity of the stimuli on the manager's decision behavior. For example, failure to adequately progress toward agreed upon "goals", which more often than not, are treated as mandatory requirements, can form, and indeed has formed, the basis for default termination of the contract.

A concern affecting the decision behavior of the responsible executives has been the equal employment opportunity requirements of the government. One of the primary ways the Government enforces the application of the laws and regulations is through its contracts. If a company which has a government contract is found to be in violation of any of the equal opportunity laws or regulations, the government may unilaterally terminate the contracts for default on the part of the contractor. Further, the corporation can be banned from receiving any future government contracts until the problems are cleared up. Having to deal with such regulatory organizations as the Office of Federal Contract Compliance or the Office of Equal Employment Opportunity Compliance will certainly affect the corporate executives decision behavior.

Another area impacting the decision behavior of responsible corporate executives is labor legislation. The primary concern of the government is that workers receive fair wages and compensation, and safe and healthful working environments. Again, the government's contractors have to give special consideration to
these requirements as government contracts include special provisions which address the Congress' concerns. The result of this type of legislation is that contractors must consider the differences in wage rates and morale for workers doing the same job, only one of which is working on a government installation. For example, assume two employees of the same skill working for the same plumbing company are installing sinks in new construction projects, one of which is a post office and the other is a commercial office building. The plumber working on the post office must be paid at a rate determined by the Department of Labor, which will include fringe benefits. The plumber working on the office building may be paid as little as minimum wage. Similarly, the government mandated increases in safety requirements though improving working conditions, have forced other plant closures because they were too expensive to modernize.

The natural environment has also become a factor affecting the manager's decision behavior as a result of government edicts. Here again, the influences of the American people were interpreted by the Congress, influencing its setting of national policy, which in turn is implemented, in part, through government contracts.

Corporate Environment Influences. Individually identifiable demands from external sources which affect executive decision behavior have also been recognized. Public officials receive pressure from special interest groups and, in turn, put pressure on the corporate community; as does the special interest groups. This extends the planning time frame, in order to respond to the pressures for such things as cleaner natural environment and better community relations. Yet, pushing for larger, quicker returns at reduced risk and cost are the stockholders and higher management; while customers seek lower prices, better products, and quicker turn-around on orders. As with a balloon, if you push at one point, it will poke out at another place; and, so it is in industry. One result of this pressure has been a reduction in corporate-sponsored research and development. Thus, to satisfy their needs, corporate executives have turned to the government with minimal risk to the company, even though the return may not be as great.

The position of minimal return, or profit satisficing, is contradictory to the position held by some government employees. This situation is also reflective of the government employee's perspective of the corporate executive's priorities on other key issues. Such things as profit, cashflow, long-term objectives and relationships, and quality are other examples of business objectives which are considered differently by contractor executives vis-a-vis government personnel. The priority of these types of concerns are, of course, additional influences affecting executive decision behavior and contractor motivation.

These and many other influences, place the executives responsible for the responses to government solicitations in a position of having to make responsive judgements while operating within a range of acceptable standards. Sometimes executives are required to sacrifice long-range goals for near-term objectives. Sometimes personal experiences will conflict with a cognizant upper manager's knowledge of a specific situation. And, sometimes, despite all the available data, the manager is forced to make a judgement call. Occasionally the risks can be minimized by maintaining a relatively stable operating environment. Nonetheless, there exist many identifiable influences on the executive's decision behavior. Seldom, if ever, does perfect information exist; therefore, the successful decision will usually produce a satisfactory result, though rarely a maximum result.

The point of this discussion is to summarize reiterate the findings of the literature research. In particular, it has been shown that numerous succinct variables influence the decision behavior of corporate executives contemplating government solicitations. A determination of the exact number of specifically identifiable variables has not been the goal. Indeed, this researcher is not convinced that such a goal is obtainable. Rather, it has been shown that the breadth of the general sources of decision influence is diverse, with the impetus being rooted in the intangible human drives, the requirements of the corporate officers, the desires of the community, the needs of the customer, and the
demands of the citizenry as interpreted by the Congress. Without doubt, the environment of the corporate executive responsible for government contracts is complex. The results of the subsequent survey project showed that, indeed, each identified variable specified in the survey instrument was addressed across the spectrum of possible answers.

Relationship of the Variables (Criteria)

The result of the literature search was that the alternate hypothesis proved to be the valid hypothesis; i.e., numerous individual criteria exist which influence corporate executive decision behavior. Therefore, it now remained to determine the existence of any meaningful relationships between the individual variables and, if such a relationship exists, to establish the nature of the relationship.

A corollary was established to the alternate hypothesis stating that individual variables or criteria could be grouped such that the groupings were generalized representations of the individual criteria. The analysis was accomplished using factor analysis techniques. The purpose of the factor analysis technique is to take the numerous individual criteria and attempt to cluster them into logical groups of variables such that the clusters of variables are identifiable in a meaningful manner in which the factors are a generalization of the inclusive variables. In the case of this study, a meaningful manner has been determined to be some representation of the major characterizations of the influences affecting the executive manager's decision behavior as indicated by factor loadings of 0.3 or greater.

Factor 1. The Socio-Economic Factor. The first factor to evolve has significant loadings (greater than or equal to 0.3 absolute) on 19 of the 46 criteria (See Table 1). In searching for some common denominator for these criteria as generalized by the factor analysis, it appears that these criteria can be related to either social concerns or economic concerns. Of the 19 criteria comprising this factor, 15 reflect economic concerns and 8 reflect social environment concerns.

In general, the social issues appear to indicate a concern on the part of corporate executives of the skills and abilities of the government personnel. Additionally, the corporate executives apparently give serious consideration to the limitations placed on them by the regulations inherent in government contracting. The implementation methodology; in particular, the attitude, ability, and understanding on the part of the government's representatives, of the intent of socio-economic legislation apparently generates a significant level of concern on the part of corporate management; and consequently, gives significant support to the characteristics of this factor.

The economic issues are less abstract. Concerns reflective of costs and direct impacts to the profit potential, such as cost regulations, inflation, interest rates, and etc., are apparent. Executive management concern about the economic impact of social legislation and reulations, such as excessive paper work, government caused delays, non-productive capital expenditures, and etc. are also reflective of the composition of this factor.

Factor 2. The Near-term Technological Advancement Factor. The second factor to evolve as a result of the varimax orthogonal rotation factor analysis has significant loadings of 25 of the 46 criteria (see Table 2). While it should be recognized that every business decision has potential social or economic impacts to some extent; succinct social or economic concern does not appear to be the generalized dominion of the criteria which have significant loadings on the second factor. Rather, it appears that the common element of the concern expressed in this factor, as a function of the criteria loadings, are those concerns and issues which have a time component or a technological state-of-the-art component. In particular, if near-term is classified as being a period of time of up to two years into the future (as suggested by Saltzman (1984) and Westphal (1984)), all of the issues included in the second factor have a near-term component in its consideration. Further, the second factor has a component which can be attributed to corporate management's concern about the
company's ability to remain technologically competitive and meet the government's requirement for continual technological advancement in the products it buys. Therefore, if those criteria having significant loadings on the second factor are recognized as near-term technological advancement issues which may affect company operations for a period of up to two years, then this factor may be generalized as the near-term technological advancement factor.

Factor 3. The Long-term Planning Factor. The third factor to develop after the varimax orthogonal rotation has significant loadings on 17 of the 46 criteria (see Table 3). The search for a generalized description of the factor had to recognize that many of the variables having strong loadings on this factor have been generally defined as classical long-range corporate concerns and goals. Thus, it became apparent that this third factor can be described in general terms as the long-term planning factor.

The importance of these generalizations lies in the fact that they: i) prove that an interrelationship between specified variable exists; ii) show how the interrelationships between the variables can be utilized to reduce the complexity of the decision criteria; and, iii) provide a vehicle by which the interrelationships of the numerous variables affecting corporate status can be established and or confirmed. Recognizing that each of the three factors is a synthesis of the decision behavior variables, it only remains to determine the relationship of the influences of the exhibited decision behavior, as reflected in the factors, to the status of the companies, as indicated by the demographic data of all the respondents' corporations.

Demographic - Factor Interrelationships

The final mathematical analysis of this study was to establish the existence or non-existence of any significance in the way the deduced factors interrelate with certain specified demographic data relative to the corporations whose executives responded to the questionnaire. Specifically, the respondents were asked to categorize or rank their organization's status, operations, and success in

TABLE 1

<table>
<thead>
<tr>
<th>Socio-Economic Factor</th>
<th>Criteria Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher profit potential elsewhere</td>
<td>0.3376</td>
</tr>
<tr>
<td>Disagreement with the government</td>
<td>0.3872</td>
</tr>
<tr>
<td>Bad deal from the government</td>
<td>0.3672</td>
</tr>
<tr>
<td>Poor interpersonal relationship</td>
<td>0.5285</td>
</tr>
<tr>
<td>Enforcement of socio-economic regulations</td>
<td>0.6810</td>
</tr>
<tr>
<td>Government lack of skill/professionalism</td>
<td>0.6256</td>
</tr>
<tr>
<td>Government involvement in the company</td>
<td>0.6217</td>
</tr>
<tr>
<td>Government financial arrangements</td>
<td>0.5912</td>
</tr>
<tr>
<td>Inadequate leadtime</td>
<td>0.3331</td>
</tr>
<tr>
<td>Excessive paperwork</td>
<td>0.6672</td>
</tr>
<tr>
<td>Government caused delays</td>
<td>0.6195</td>
</tr>
<tr>
<td>Socio-economic requirements</td>
<td>0.7566</td>
</tr>
<tr>
<td>Inadequate/excessive specifications</td>
<td>0.4498</td>
</tr>
<tr>
<td>Cost regulations</td>
<td>0.6490</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.3524</td>
</tr>
<tr>
<td>Interest rates</td>
<td>0.3810</td>
</tr>
<tr>
<td>Non-productive capital requirements</td>
<td>0.4317</td>
</tr>
<tr>
<td>Government regulation</td>
<td>0.6957</td>
</tr>
<tr>
<td>Community situation</td>
<td>0.4208</td>
</tr>
</tbody>
</table>
TABLE 2

Near-Term Technological Advancement Factor Criteria Loadings

1. Scheduling resources 0.4453
2. Develop new capability 0.4860
3. New markets or research 0.4063
4. Guarantee of future/continuous business 0.3576
5. Long-term funded contracts 0.4792
6. Contract type 0.4155
7. External political influences 0.3790
8. Internal political influences 0.3790
9. Fair and equitable contract 0.3132
10. Disagreement with the government 0.4222
11. Bad deal from the government 0.5759
12. Complex technical problems 0.5665
13. Poor interpersonal relationships 0.4318
14. Government involvement in the company 0.3279
15. Inadequate leadtime 0.4156
16. Inadequate/excessive specifications 0.4029
17. Requirements beyond the state-of-the-art 0.6619
18. Government requested support 0.5117
19. Government re-direction 0.5017
20. Investment capital requirements 0.6241
21. Inflation 0.3581
22. Non-productive capital requirements 0.3873
23. Production labor requirements 0.4180
24. Research labor requirements 0.4822
25. Community situation 0.3126

TABLE 3

Long-term Planning Factor Criteria Loadings

1. Good product 0.3152
2. Company survival 0.4048
3. Company growth 0.6445
4. Profit on sales 0.5196
5. Return on invested capital 0.6131
6. Skilled workforce 0.4549
7. Utilize excess capacity 0.3611
8. Develop new capacity 0.4493
9. Develop dominant position 0.4524
10. New markets or research 0.4360
11. Guarantee of future/continuous business 0.5718
12. Long-term funded contracts 0.5288
13. Working relationship with the government 0.4015
14. Contract type 0.3603
15. Competition 0.3615
16. Improved cashflow 0.4608
17. Inflation 0.3363

dealing with the government based on eleven criteria. These data then served as the basis against which the factors impact on the criteria was assessed. If it could be shown that there did exist a significant difference of the means of the criteria as those criteria interrelate with a given factor, it can be deduced that the interrelationship is significant. That is, the effect of the
factor on the executive manager's decision behavior within a demographic category is different than the effect of the factor on the decision behavior of executives in other demographic categories. For example, an executive whose corporate sales are more than $1 million per year may consider the effects of the socio-economic factor differently than the executive whose corporate sales are less than $1 million per year.

In all, eleven different demographic criteria were assessed. Table 4 is a summary of the probability greater than F statistics resulting from the analysis of variance calculations. As can readily be seen in this table, four of the demographic categories do not have any significant differences between the means of the possible responses; i.e., probability greater than F statistic greater than 0.05, as the means of those responses relate to the three factors. In particular, these criteria are:

a. The organization's growth rate relative to its industry;
b. The success rate of contract award for the organizations;
c. The degree of technological competition; and,
d. The executive level having responsibility for the final proposal decisions.

A brief discussion of this particular finding is in line.

TABLE 4
Summary of PR > F Statistics

<table>
<thead>
<tr>
<th>Demographic Criteria</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Organization Size</td>
<td>0.0269</td>
<td>0.0477</td>
<td>0.1663</td>
</tr>
<tr>
<td>2 Organization Growth</td>
<td>0.4045</td>
<td>0.6178</td>
<td>0.1664</td>
</tr>
<tr>
<td>3 Sales to Government</td>
<td>0.0003</td>
<td>0.0001</td>
<td>0.0006</td>
</tr>
<tr>
<td>4 Total Annual Sales</td>
<td>0.0698</td>
<td>0.6737</td>
<td>0.0057</td>
</tr>
<tr>
<td>5 Organization Emphasis</td>
<td>0.5566</td>
<td>0.0046</td>
<td>0.0190</td>
</tr>
<tr>
<td>6 Price Competition</td>
<td>0.0062</td>
<td>0.0365</td>
<td>0.3716</td>
</tr>
<tr>
<td>7 Contract Award Rate</td>
<td>0.1562</td>
<td>0.2470</td>
<td>0.0774</td>
</tr>
<tr>
<td>8 Technical Competition</td>
<td>0.1932</td>
<td>0.6494</td>
<td>0.4373</td>
</tr>
<tr>
<td>9 Percent Proposals Submitted</td>
<td>0.1615</td>
<td>0.4111</td>
<td>0.0267</td>
</tr>
<tr>
<td>10 Responsible Executive</td>
<td>0.2584</td>
<td>0.1174</td>
<td>0.5919</td>
</tr>
<tr>
<td>11 Final Decision Level</td>
<td>0.9365</td>
<td>0.0458</td>
<td>0.5899</td>
</tr>
</tbody>
</table>

PR > F statistic less than 0.05 is significant

The purpose of criterion 2 was to ascertain the existence of any significant differences in the interrelationships of the factors and the rate of growth of an organization. The probability greater than F statistics of 0.4045, 0.6178, and 0.1664 for the socio-economic, near-term technological advancement, and long-term planning factors respectively, indicates there are not any significant differences between these factors and the organizational growth rate. Thus, it can be assumed that executive decision behavior, as may be impacted by concerns relative to organizational growth, is, generally, of little consequence when contemplating government solicitations.

Criterion 7 recognized that different organizations may have different contract
award success rates. The objective was to establish the existence of any
differences in the contract award rate due to the impact of management decision
behavior stimuli, given five possible levels of success ranging from 0 to 100
percent. The result of the analysis implies that the effect of the corporate
manager's concern of the three factors has no effect on the percentage of
contracts the company has won.

The objective of criterion 8 sought to determine the existence of any significant
relationship between the influences on the manager's decision behavior and the
extent to which the manager regarded the organization's technical competition.
The finding here is that within a given product arena, there are no significant
differences in the relationships of the product technology and the way in which
the three factors influence managerial decision behavior including the near-
term technological advancement factor. In particular, this factor is concerned
with the organization's ability to advance the state-of-the-art through research
and development in response to customer needs. Therefore, by meeting the needs
of the customer, it can be reasoned, the negative effect of technological
competition is minimized; and thus, the relationship of the factors to
technological competition is minimized, to the extent that there are no
significant differences between the categorical means.

To establish the existence or non-existence of any differences in the
interrelationship of the various levels of corporate executives and the impact of
the factors on the decision behavior of the executives at various levels relative
to proposal decisions, criterion 10 addressed the corporate decision level. As
shown in the table 4, there are no significant differences in the
interrelationships of the three factors and the executive's rank. This implies
that it may be possible to move the proposal decisions down in the organization
hierarchy.

The remaining seven criteria, however, do have some significant differences in
the criteria responses and the interrelationship of the criteria to the factors.
The existence of these differences in the interrelationships and the impact of
them due to the effect of the factor on the decision behavior of the executive is
a significant finding indicating a difference in the influence of the factors on
the decision behavior of executives. The existence of the differences is the
subject of the following discussion.

Criterion 1 was intended to establish whether or not any significant differences
existed in the interrelationship of an organization's size and the way the
executive managers considered the organization's environment; i.e., the effect of
the organization's environment on managerial decision behavior.

The first significant result to be developed is that the different sized
organizations relate differently to the issues which comprise the socio-economic
factor. (A problem is encountered, however, in trying to assess how the
interrelationship between organization size and socio-economic concerns differ
between the different sized groups. The reason for this is that the Duncan
procedure, used to map the differences in the groups of means, is not as
stringent as the analysis of variance calculations; and therefore, does not
detect the differences in the means.) Nonetheless, the fact that a calculated
difference does exist should be noted. Similarly, a difference in the
interrelationship between organization size and the near-term technological
advancement factor should be noted. Having determined the existence of the
difference in the way the different sized organizations relate to this factor,
the Duncan procedure can be used to verify and identify where the differences
are centered. In this case, those executive managers of organizations with
501 to 1,000 employees relate to this near-term technological advancement
factor differently than those managers of an organization having more than
10,000 employees. However, no significant differences are apparent in the
interrelationships of organizations having more than 100 employees and near-term
technological advancement concerns. Similarly, there are no significant
difference between the organizations having fewer than 501 or more than 1,000
employees and their executive managers' concern about the near-term technological
advancement factor.
Finally, the long-term planning factor is not considered to have a significant interrelationship. Thus, it can be deduced that there are no significant differences in the interrelationship between the organization size and the long-term planning concerns.

In order to address the question of the organization's sales to the government, the total possible of 100 percent was divided into five equal sales percentage range categories in criterion 3. The results of the analysis showed that all three factors have differing interrelationships to the percentage of the organization's sales to the government.

In the case of the socio-economic factor, a significant difference exists between the means of the percentage of organizational sales to the government categories. Managers responsible for such concern relate their decision behavior differently if their organization's sales to the government are 20 percent or less of the total sales when compared to the interrelationship of managers of organizations having more than 60 percent of its sales to the government. However, the interrelationship of the socio-economic factor with the organizations having less than 61 percent of their sales to the government are similar in nature.

Likewise, organizations having 21 to 40 percent of their total sales to the government have a different interrelation to the socio-economic factor than do those organizations with more than 60 percent of total sales being government.

The data also indicate a significant difference in the means of the percentage of sales categories as a function of the interrelationship of the near-term technological advancement factor. In the first group, organizations making more than 40 percent of their sales to the government consider the near-term technological advancement factor in a similar manner. Companies having less than 41 percent of their sales to the government consider this factor in a like manner. However, there does exist a disparity in the way the interrelationship between the near-term technological advancement factor is considered between the two groups (i.e., organizations having 40 percent or less of their sales to the government and those have more than 40 percent of its sales to the government.)

When considering the long-term factor, the differences in percentage of sales to the government again appears to play an important role in the organization's interrelationship to the factor. In this case, all those organizations having greater than 20 percent of their sales to the government have a similar interrelationship in the long-term factor. Similarly, those organizations having 61 to 80 percent or less than 41 percent of their sales to the government consider the long-term factor in a similar manner. However, those organizations having 20 percent or less of their sales to the government have a different interrelationship when considering the long-term factor than do those organizations which have 41 to 60 percent or more than 80 percent of their total sales to the government. As has been noted, those organizations with 41 to 60 or more than 80 percent of their total sales to the government have a similar interrelationship to the long-term factor.

The purpose of the forth criterion was to establish the existence or non-existence of any significant relationship between the total organizational annual sales and the derived factors. In this situation it was found that neither the socio-economic factor nor the near-term technological advancement factor have a significant interrelationship with total annual sales. However, a significant difference between the means of the categories relative to the long-range factor does appear to be present.

Two groups of categorical responses were observed. The first group of responses includes those organizations with less than $500,000 in annual sales and those with more than $1 million in total annual sales. The obvious gap of those organizations that have total annual sales of between $500,000 and $1 million constitutes the second group. The finding of this analysis, then, is that there are no differences in the interrelationship between the long-term factor and the first group, as described. However, a difference in the consideration of the interrelationship of the long-term factor does exist between those companies in the $500,000 to $1 million dollars in total annual sales and those organizations
with sales outside this range category.

Criterion 5 was designed to assess the existence of the factor interrelationships with differences in organizational emphasis. In the case of the socio-economic factor, it appears that no significant differences exist in the interrelationship of the factor and the categorical emphasis. The near-term technological advancement and long-term factors have significant categorical differences.

In the case of the near-term technological advancement factor, organizations emphasizing basic exploratory or applied research, engineering development, or engineering design stress the factor such that the interrelationship of the factor is similar for all three types of organizations. The same statement can be made about organizations grouped such that basic exploratory or applied research, engineering design, or product organizations were all inclusive. However, the extent of the near-term technological advancement concern of organizations involved in engineering development is different than that of organizations primarily emphasizing production or manufacturing.

A similar situation exists for the long-term factor. As in the second factor, there is no significant difference in the categories of those organizations stressing basic exploratory or applied research, engineering design, or production when considering the interrelationships of these categories to the long-term factor. Similarly, there is no significant difference between the interrelationship of an organization emphasizing engineering development or engineering design, and the long-term factor. Nonetheless, the results of the Duncan procedure indicate that two significant differences do exist. The first difference is that which is reflected in the interrelationship of the long-term factor and engineering development and the long-term factor and production or manufacturing. Also, a significant difference exists in the interrelationship between the engineering development category and the long-term factor, and the basic exploratory or applied research category and long-term factor.

Criterion 6 recognizes that different organizations operate in different competitive environments. Thus, the reason for this criterion is to ascertain the existence, if any, of differences in the way corporate executives operating in different competitive price environments address the interrelationships represented by the three factors. The findings are that there does exist a difference in the interrelationships of the socio-economic factor and the near-term technological advancement factor relative to the executives in the various categories of price competition. Conversely, the long-term planning factor is not considered to be significant.

As in criterion 1, a problem is encountered in attempting to assess where the interrelationships of the different categories of price competition differ in that relationship to the socio-economic factor. This is, again, because the Duncan procedure is not as stringent in its calculation of the analysis of variance; and therefore, does not detect the existence of differences of the means. Nonetheless, the analysis of variance calculations have identified the existence of at least some differences in the interrelationships of the categories price competition and socio-economic factor, and that finding should be considered significant.

Differences are more apparent in the interrelationships of the categories of the price competition and the near-term technological advancement factor, however. First, some similarities should be noted. Specifically, there are three groupings of categories which, when the individual categories within the grouping are reviewed, consider the interrelationship to the near-term technological advancement factor in a similar manner. In particular, when taken as a group, those executive managers working in a non-competitive environment, whether it is due to high cost of entry or monopoly conditions, consider the interrelationship between their organizations and the second factor similarly. Also, those executives operating with some degree of competition consider this interrelationship in a similar manner. Interestingly, those executives in the non-competitive due to high cost of entry or operations category, the competitive category, and highly competitive due to low cost category, when taken as a group, all consider the interrelationship with the second factor in a similar manner.
The differences in the way the categories relate to the second factor are most obvious between the non-competitive due to monopoly and the highly competitive due to perfect economic competition categories. A difference was also noted in the interrelationship of the categories between the non-competitive due to monopoly conditions and both the competitive and the highly competitive due to low cost categories. One other difference should be noted. The manner in which those executives whose organizations are categorized as non-competitive due to high cost of entry or operations and those whose organizations are categorized as highly competitive due to perfect economic competition have a different perspective of the interrelationship of their organizations and the near-term technological advancement interrelationships.

Many times proposal efforts will be started by contractor personnel only to be stopped before completion, or if completed, not submitted to the customer. The intent of criterion 9 was to determine if there are any differences between the categories of the organizations and the interrelationship of the categories to the factors. In the cases of the socio-economic factor and the near-term technological advancement factors, there does not appear to be any significant differences between the categories and the interrelationships of those categories to the factors. However, there does appear to be significant differences in the interrelationships of the categories and the long-term factor.

In this case, those corporate executives who submit 41 to 60 percent of the proposals started have a different interrelationship with the long-term factor than do those executives who submit 40 percent or fewer of the proposals begun by their organization. However, the interrelationship for these same executives, in the 41 to 60 percent category, is the same as that of those executives in the 61 percent or more categories. A similar observation can be made of executives who submit 40 percent or fewer and more than 60 percent of those proposals started by their organization to the customer; that is, when taken as a group the executives fitting these categories consider the interrelationship with the long-term factor in such a manner that there does not exist any significant difference in that consideration.

Finally, criterion 11 sought to establish the existence or non-existence of any differences in the various corporate organizational decision levels and the interrelationship of the three factors. Depending on the company, different degrees of authority will be delegated to different organizations within the company. The authority to commit the company to some outside activity, such as entering into a contract, is no different. That authority has the potential of being delegated to any one of several organizational levels. The importance of this question lies in the fact that under government contract law, if a company submits a proposal to the government, the contractor can not withdraw the offer unless it expires or a major bidding error can proven. Otherwise, the government has the right to accept the offer and enforce the contractual provisions. As a result, the corporate organization given authority to submit offers to the government is an important corporate function. Be that as it may, the extent of that concern relative to this criterion is; are there any significant differences between the factors and the organizations, with contracting authority, interrelationships?

The results of the analyses indicate that the socio-economic factor interrelationship with the various categories has no significant difference between categories. The same position holds true for the long-term factor as well. However, the near-term technological advancement factor does appear to have significant differences between the categories and the considerations of the factor interrelationships.

In this case, the corporate level, division or subsidiary level, engineering, and marketing appear to give similar consideration to the interrelationships of the near-term technological advancement factor. The same thing can be said of the corporate-level marketing, and contracts offices when they are considered as a group; i.e., consideration of the interrelationship between these organizations and the near-term technological advancement factor does not have any significant differences. However, two significant differences are apparent. These are a
difference between the contracts organization and the division or subsidiary level organization, and a difference between the contracts organization and the engineering organization. In these two cases the analyses show that there does exist a significant difference in the manner by which the interrelationship of the near-term technological advancement factor is considered by the responsible executive managers.

Conclusion

The objective of this analysis has been to establish and identify the existence of any measurable interrelationships between differing corporate operating environments and the concerns and/or considerations effecting the decision behavior of responsible corporate executives when considering government contracting opportunities. The fact of the matter is that in four specific areas it was determined that the corporate demographics apparently have no effect on, nor were effected by the decision behavior variables. Indeed, it should be noted that a specific cause and effect relationship has not been identified in any of the cases. Rather, it has been shown that in certain demographic circumstances the concerns exhibited by executive management, when considering government contract opportunities, are similar; and, that these interrelationships can be identified and measured relative to the impetus of contemporary government contracting.

Summary

When reviewing opportunities offered via government solicitations, it has been shown that the responsible corporate executives address at least 46 separate and distinct environmental concerns which affect their organization. This finding, based on the literature search and the resulting questionnaire returns, provided the basis upon which the null hypothesis was found to be not true and the alternate hypothesis was determined to be true. In particular, it was shown that there are separate and distinct considerations made by corporate executive management of the environmental issues when addressing government solicitations.

Having established this fact, it was shown, through factor analysis techniques, that the 46 decision variables identified in the survey instrument can be combined in such a manner that the majority of the variance of the variables can be accounted for by major factors. Further, these variables are aligned such that the nature of the factor could be identified. This identification is refined enough that the factors are describable in such a manner that they provide a generalized description of the associated variables. In this study, the factors have been identified as:

1. The socio-economic factor;
2. The near-term technological advancement factor; and,
3. The long-term planning factor.

The final analysis established the existence of significant interrelationships between the generalized factors developed previously and the specified demographic variables. Through the analysis of variance and Duncan analysis procedures it was shown that a significant interrelationship exist between seven of the eleven specified demographic criteria and the generalized environmental factors.
DeMong, R.F. and Strayer, D.F. The underlying theory of incentive contracting. 


Saltzman, W. Staff to Executive Vice President, Business Development, DBA Systems, Inc. Interview, January, 1983.

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