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**Capability Management: An Aproach to Selling Research and Development**

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Summary

This paper contains a new concept in the approach to marketing R&D capabilities to the Defense/Space market. The concept is based primarily on establishing capability managers as the focal point of the marketing function. It suggests that this is only one of the several new concepts that are needed to meet the challenges of this unique marketplace.

The paper reviews the current approach to selling R&D and tries to relate it to the workings of the marketplace. It points out some of the fundamental shortcomings of the current practice and, in building upon this examination, it goes on to suggest a new approach to the problem.

Basic Questions

Now in order to present a logical argument for this concept it will be necessary for me to raise and answer three basic questions.

1. What is the product - i.e., what are we selling in this business?
2. Who is the customer?
3. How does the customer buy?

Unless we have a common understanding relative to the answers to these questions all discussion relative to a marketing approach is fruitless. These will constitute our point of reference.

All too often we tend to lose sight of the fundamentals. In practice, we tend to think that more salesmen will yield more business without enough regard to what we want these salesmen to do and to how they fit into the workings of the marketplace.

The Product - R&D

Let us move on to explore the answers to these questions: First, what is the product - i.e., what are we selling in this business?

The defense and space business is not a product business in the sense that most American businesses are. Defense and space companies rarely produce a product for inventory which they then offer for sale to the customer. Rather, these companies offer R&D capability, and in the larger programs this capability is augmented by management capability, as the basic product to the Government market.

Now, just what is R&D capability and management capability? I would like to suggest that both R&D capability and management capability are forms of original problem-solving capability. This total capability is the capacity to pull together, through managerial, technical, and scientific skills; brand new equipments to perform new and very specialized jobs - jobs which have not existed before, for which equipment performance specifications are not easily definable by the best brains available at the time of the procurement action. I do not want to dwell on this subject, except to make the point that such capability is not easy to demonstrate - as say, an ash tray, a truck, or even a computer; nor is it easy to communicate. It can't be put into a sales manual, and, to add to these difficulties, it is rapidly changing - almost by the hour. So, the product, real as it may be, is a very intangible entity at best.
The Customer

Now, let us consider the second question:

Who is the customer?

The customer, likewise, is not easily identifiable. There is a great tendency to think of the customer as the Air Force, the Navy, the Army, etc., or as even sub-elements of these organizations such as the Electronics Systems Division — or the Bureau of Weapons, or perhaps as the primes, e.g., Boeing, Lockheed, or General Dynamics. However, the customer for any given procurement is in fact many people in many different organizations. For example, buyers, contract administrators, project engineers, planners, financial analysts, users, and civilian executives — all of these and more constitute the customer. Each of these has a say in almost every procurement action. Each represents a different organization, and in many cases they represent different widely scattered facilities. For example, suppose the Air Force wanted to buy a new airborne fire control system. In this case, the Strategic Air Command, at Omaha, Nebraska, would be involved as the using agency; the Aeronautical Systems Division, at Dayton, Ohio, would be involved as the technical laboratory and as the procuring agency; the Air Training Command, at Randolph AFB, in Texas, would be involved from a training standpoint; the Air Force Logistics Command, at Dayton, Ohio, would be involved from a logistics support standpoint; the Research and Technology Division, at Bolling, outside Washington, D.C., would be involved from a technology standpoint; perhaps the Electronic Systems Division, at Bedford, Massachusetts, might be involved from an electronics support standpoint; the Air Force Systems Command, at Andrews AFB, outside Washington, D.C., would be involved from a planning standpoint; the Air Staff, at the Pentagon, would be involved relative to the approval and in establishing the requirements; and the Director of Defense Research and Engineering would be involved as the Department of Defense technical arm. And on top of all this, the financial community throughout all these arms of the Air Force and the Department of Defense would be involved. Therefore, the skills represented by this spectrum of organizations are diverse and the points of view of the individuals therein, likewise, differ.

As you see, the complexity of customer structure is staggering. It's a mechanism that is tied together by very formal relationships, as is typical in large organizations. In addition, however, its people are tied together by rather formal-informal relationships. These are usually found between engineers and engineers, planners and planners, financial analysts and financial analysts, etc., within agencies and intra-agencies. The point I wish to stress here is that many people go to make up a procurement decision, each of whom plays a very special and distinct role. Some evaluate, some recommend, some review, and some approve. From the standpoint of marketing, it is important that each be recognized for his contribution to the procurement decision-making process.

Acquisition Process

We have now defined the product and have identified the structure of the customer. Let's move on to the third question:

How does the customer buy?

As may be implied in the previous statement, the Government customer buys through a formal process. The customer's total acquisition process in most cases requires three years, and, may require as long as five to seven years. Let me point out that this period of time is not that which is spent to purchase; rather, it represents the period of time from the conception of the idea through procurement.

Throughout this period of time, the customer is furiously active. All the people I suggested above, and more, play an important part. Of course, it would be difficult enough if they were all physically housed in one facility, but the geographical problem adds additional dimensions to the complexity of the procurement process.

In addition to the notion that the process is formal, that many people participate, perhaps the most significant part of the customer's acquisition process is his capability to perform detailed analysis of proposed solutions. The Government customer has vast technological resources which he uses to analyze in very minute detail the proposals submitted. In some ways the Government customer is like the man from Missouri — he wants to be shown in order to believe. In short, the Government customer is probably more sophisticated than any other customer.

Any marketing program, therefore, must face up to the fact that the customer is many people, and not simply organizations, and that the customer has a formal and complex acquisition procedure. On this basis, it would appear that the main thrust of the marketing effort must be in personal selling. While the marketing effort must contain a market research program and a soft-sell program (i.e., advertising and sales support devices), I want to focus this portion of my talk on the kind of personal selling needed.

Personal Selling

As in all sales situations, we must first determine what the customer will tolerate as a personal sales effort.

The Government customer is a demanding customer. Each individual wants answers on the spot, not days later. He wants an authoritative reply; he does not want a middleman who might provide answers at some later time. The customer wants to talk to people who can commit the company or who can speak with authority on the subject at hand. I like to say that the customer wants, or prefers, "opposite numbers." For example, customer program managers want to talk to company program managers; executive management wants to talk to company contract administrators; customer engineers want to talk to company scientists and engineering management; customer planners want to talk to company planners, both technical planners and market planners; military and civilian executives want to talk to company executive management; etc.

It seems to me, then, that these company people are in fact the company's "salesmen" in that they are those who can get through, those who are welcomed by their opposite numbers in the customer's organization. Some of the old-line defense companies have learned this game well — that selling is a total company proposition, not solely the province of the salesmen, but in the field or working out of the home office.
Accountability for Sales

But, if all these people are in the field selling, who then can be held accountable for the generation of sales? The answer to this question is not a simple one, for no single person makes sales in this business. Success or failure is dependent upon the efforts of many people. Heretofore, sales have been made by those in industry who have been fortunate enough to uncover requirements early in the acquisition cycle and smart enough to do something about selling their proposed approach to the key people in the customer's organization before the Request for Proposal was issued.

In today's business situation, in which cost effectiveness plays an ever-important role, companies cannot leave to chance the early identification of new business, trade-off of bid opportunities, the assignment of people to proposals, investment in research, etc. These factors, and others, go to make up the difference between success and failure — success and failure as a business enterprise as well as success or failure in the marketplace. The man responsible for these decisions, therefore, is the real "sales manager."

This man, however, is likely to be a manager of a technical operation. In some companies the operation may be a quasi-profit center. In others, because of accounting systems, he will be simply a manager of a laboratory or technical department in a larger company. This man's responsibility, whether written or not, is the maintenance of the business health in his department. If he does not concern himself with the business health of his department, no one else is likely to do so, be there marketing department or no marketing department to support him. Invariably, he makes the decision to pursue one item of business or not to pursue it, he assigns the people to one proposal effort against another, he assigns priority to the various elements of business being pursued, he enforces the execution of the marketing plan, and he makes the price trade-off decisions; in short, he is the "sales manager." So, sales leadership has been assumed by the technical department.

Need for Capability Manager

In addition to his role as sales manager, this man also has performance responsibilities. He has to see to it that his people perform the contracts on schedule, within cost constraints, etc. He has personnel and financial problems to deal with. He is in a real way a business manager with very strong technical leanings. So, he is not a full-time sales manager. Therefore, I suggest he needs a "practical" sales manager to plan and exercise control over the selling activities of all his "salesmen." He needs a man to see to it that everything that needs to be done for the success of his "product" gets done. I suggest that this man might be called a Capability Manager.

Current Practice

But, before I get into explaining the concept of the Capability Manager, allow me to spend a few moments to point out how the industry is currently structured to execute the sales job.

Marketing Department

Characteristically, the industry has formed a marketing department. Within this department at least four basic functions exist: market research, home office sales, field sales and advertising and sales promotion. The organizational structure may vary, depending upon the size of the company and the extent to which it is decentralized. Nevertheless, the organization of concern to us here is the home office sales department. I should point out that it is rarely called a sales department. These people, however, are regarded as the company's salesmen, be they called advanced planners, customer liaison men, marketing representatives, program managers, etc.

Salesman's Job

By and large, the function of these people is to go into the marketplace and try to uncover programs that are soon to go out for bid; and to relay this information to the company's management such that the company might begin a pre-proposal effort in advance of the receipt of the request for proposal. In some cases, the marketing man contributes to the generation of the proposal; but, this is more the exception than the rule. This man may also go into the marketplace to obtain specific information that the technical people need in order to prepare a good proposal. In a very few instances, marketing men have prepared detailed sales plans in which a strategy with milestones has been established and a call plan has been developed. In the cases where this has happened, the implementation of these sales plans has been more the responsibility of management than that of the salesman. In short, the salesman's job deals more with gathering intelligence than with leading the company into a given market or leading a particular sales campaign. He is a support to, rather than a leader of, technical management.

Paradox and Problems

There is an important paradox here: the marketing department actually acts to gather information for the technical department so it, the technical department, can make the fundamental marketing decisions. In other words, the unsuspecting technical department is, in fact, the marketing department, while the marketing department more closely resembles a market research and missionary sales operation. The marketing department, therefore, fails to exert the position of leadership in the firm.

What has led to this situation? Is it important to the future of R&D marketing? Four factors have a vital bearing:

The Pecking Order. The role of the technical man in R&D business has always been a commanding one. Not very long ago, most of us can remember, the market was a seller's market. The government issued requests for proposals, and industry's engineers responded. There were no marketing departments; there was little need for marketing. The customer came to the company.

Now the competitive climate has changed considerably, but we still find ourselves offering highly technical solutions in our proposals. The character of the "product" has not changed. This means that the proposal, because of its technical content, is prepared almost exclusively by the technical department, as it has always been. No wonder engineers have come to believe that they earn the business, that they deserve the credit for winning competitions, and that the salesman is, at best, only a marginal contributor.

Psychological Walls. In R&D companies, the engineer has always been present; the salesman is a "Johnny come lately." With few exceptions, the salesman came
upon the scene about 1960 and was supposed to take
over the sales responsibility from the engineers. It is
not difficult to understand the conflict this move gener-
ated. Eventually this conflict built a wall between the
two departments, a psychological wall, but one which
has to be dealt with if the firm ever hopes to take an
aggressive position in the marketplace.

This wall now prevents the salesman in most compa-
"nies from achieving any meaningful degree of effec-
tiveness. He simply cannot be effective— even at gath-
ering intelligence— unless he has a meaningful rapport
with the engineers in the plant. For example, the sales-
man must understand the capability he has for sale.
Without such an understanding, all else is simply calis-
thenics. But capability is largely brainpower or the
thinking of the key technical and scientific people in
the engineering department, and the only way the salesman
can achieve this understanding is by talking to the tech-
nical people.

Inadequate Preparation. Another important factor
contributing to the poor relationship between the sales-
man and the engineer is the salesman's lack of adequate
preparation for his job. Generally, the training pro-
grams consist of educating the salesman with respect
to the company's organization (i.e., what activities exist
and who is in charge of which activity), and to its experi-
ence (i.e., what contracts were previously won). In a few
cases salesmen have been exposed to selling techniques.
Such training might be adequate if the salesman has pre-
viously acquired a knowledge of the marketing function,
but he rarely has. Today he is usually an engineer by
training or an ex-government employee, and neither of
these two areas of experience or training qualifies a
man to be a salesman.

The issue here is: What special marketing skills
or knowledge does the salesman bring to his job? I am
sorry to say that most men in these positions see their
strengths in areas other than marketing. So the engi-
neer in the firm finds it difficult to respect the sales-
man as a representative of the marketing function. He
tends to see the salesman as just another person without
unique qualifications for the job, but one who can be used
to keep open the communications channel to the customer.
Consequently, the salesman tends to be uncomfortable
in his job.

Inferiority Complex. Many companies behave in
such a way as to seem ashamed of the marketing func-
tion and their salesmen. In these companies, words
like marketing, sales, and salesmen never appear in
the organization charts or on calling cards. In some
cases, marketing people have gone to great lengths to
cover up the fact that they are salesmen.

In short, the salesman and others in marketing
have not gained respect for their professional capacity
from their colleagues in the technical, financial, legal,
and other departments in the company. This deep-
rooted problem must be resolved before a company can
make any headway in improving the effectiveness of its
marketing operations.

Part-Time Attention

Thus there is a central inconsistency in the R&D
department, on the other hand, is not responsible for
marketing, but appears to have assumed the sales
responsibility and, perhaps, more of the marketing
function than meets the eye.

This situation gives rise to two conclusions:
1. The marketing function is unequally shared by
two departments.
2. The department which has decision-making
authority also has other, more demanding, responsi-
bilities—namely, the performance of existing contracts;
as a consequence, it can give, at best, only part-time
attention to the marketing function.

In an environment where competitive pressures are
such that survival of the firm is an everyday concern, a
more workable solution must be found to give the mar-
keting function the attention it needs in order to assure
the growth and prosperity of the firm.

Capability Management

The solution to the marketing problem, it seems to
me, can be found in capitalizing on the strengths of the
current practices and remediating the weaknesses. We
do not lack decision-making or leaders. What we do
lack is the application of the marketing concept to the
areas of business represented by these 'leaders.' As
"was indicated earlier, many people are contributing to
the execution of the marketing function—some more
productively than others. What we need now is a way to
make them act as a cohesive team. I should like, there-
fore, to outline an approach which I believe serves this
purpose.

Providing Needed Direction

First of all, I think it is important that we take a
new look at the technical decision-maker. As in the
past, he is going to continue to make marketing deci-
sions along with other decisions that affect the future
of his department or operation. So let us look on him
as a technically oriented business manager, because
this is what he has in fact become, rather than a
technical-department manager.

Given this new orientation and given the condition
that this business manager cannot give his full attention
to the marketing problem, he needs, as part of his opera-
tation, a person to plan his marketing strategy and to exer-
cise control over the marketing activities of all his
people (i.e., opposite numbers). He needs this person
to see to it that everything that should be done for the
success of his business area gets done. Let us not treat
lightly the fact that the bid decisions, the personal sell-
ing, the proposing, and so forth will be done by people
in his department or operation. He needs a right hand,
"a staff man to assist him vis a vis his marketing pro-
gram—not a salesman to sell his department's capa-
bility. He needs a capability manager to manage the
marketing of the capability represented in his operation
in much the same way as a brand manager directs a
market program in a consumer products company.

Some will argue that such a manager, to be effective,
ought to be given the authority to execute the marketing
programs. It seems to me that such an arrangement in
today's environment would be fruitless. It loses sight of
the fact that authority, to be exercised, must be accom-
panied by respect. As indicated earlier, there is no
place for the traditional salesman in the R&D company, and, hence, respect fails to materialize. More importantly, it loses sight of the central idea that many people in the particular technical operation are going to contribute to the personal selling effort and the sales campaign. What is needed is not an additional salesman but, rather, direction of the marketing effort—and this can only be ordered by the business manager to whom all the other people report.

In short, the only authority needed by the capability manager is that of (1) developing documents—the strategy, the plans, the programs, and so forth—for the approval of the business manager and (2) advising him of what he needs to do relative to the marketing program. It should go without saying that the key ingredient for his success is the degree of open support he gains from his boss.

**Tasks to Perform**

Let me be more specific about the job I would have the capability manager perform. Actually, this job is partially accomplished today in some companies. It represents, I believe, a more responsible role for the marketing man and one which will go a long way to help him gain the respect of the technical community. He would perform the following tasks:

**Market Analysis.** He would analyze his specific market of interest, i.e., the technology involved, where it is today, in what direction it is going, what the milestones ahead are, where his company stands in the race, budgetary analysis of the dollars flowing in his specific market of interest by specific organizations, and time schedules. Politics ought to be analyzed as well—politics between the project engineer and his manager, between his manager and higher levels of management, and, of course, between lateral organizations. It seems foolhardy to approach the marketplace without achieving full appreciation of the personal interests, desires, and goals of all the people in the decision-making chain.

Many companies perform market analysis, but market analysis in the aggregate: the data tend to be general and to deal with a broad view of the market, and these are little more than guesstimates of the gross amount of money to be spent in a given area. These analyses are generally prepared by staffs of market researchers who are somewhat removed from the day-to-day workings of the marketplace but who have a wealth of knowledge of the government market as a whole. I am suggesting here something quite different—market analysis for a specific capability in response to a given narrow segment of the market, for example, a segment like light aircraft propulsion systems, or ground communications, or electronic countermeasures. The analysis would be performed by a man intimately involved with the day-to-day workings of the marketplace; he would be able to take advantage of his depth of knowledge of a limited market—people, politics, trends, competitive threats, and so forth.

**Focusing of Effort.** The capability manager would also influence the engineers and scientists in his business area to undertake the technological investigations needed to make his area competitive in the years ahead. All companies undertake some form of independent R&D. It is my impression, however, that in years past the selection of tasks has been left exclusively to the technical community with the result that the work has not been well linked to the needs of the marketplace.

Recently, some companies have formed R&D committees consisting of salesmen, as well as engineers, to direct the selection of tasks. In one company, the marketing department now holds the purse strings on R&D. All this helps. Nevertheless, a capability manager is a good vehicle to assure a better match between tasks and market needs. He acts for the business manager; he can, therefore, exert great influence over the technical managers at lower echelons.

**Aggressive Strategy.** A third area the capability manager might address is the development of strategy for penetrating his specific market of interest. Many people talk about their strategies but, more often than not, these strategies deal with single procurements. The defense and space market can be developed as can industrial markets. Based on the capability in hand, decisions need to be made concerning the parameters of the market to be pursued, goals to be attained, possible trade-offs of opportunities, assessment of competitive action, management of market intelligence, and the application of PERT-type networks to individual sales efforts.

Today, the industry tends simply to respond to requests for proposals. The industry must learn to graduate from the passive role of responding, to the active one of intelligently pursuing opportunities in the marketplace.

**Implementation of Plans.** A fourth task the capability manager might perform is that of exercising some degree of control over the execution of market strategy, particularly as it relates to the larger, more important programs. Strategies are useless unless they are implemented, and when the whole company is involved in the execution of the marketing function, it is important that someone keep checking that the right people are taking the right approach at the right time and, if circumstances warrant a change in direction, that all people concerned are apprised of such a change so that the left hand will know what the right hand is doing.

**Presentation of Proposals.** Finally, the capability manager might concern himself with the proposals generated. All too often, proposals are technical dissertations. A proposal should be an appeal to the mind of the reader. I sometimes think, as I reflect on my experience as a procurement officer, that companies fail to recognize that human beings are involved in assessing the value suggested in the proposal. People—customers—have likes and dislikes; some are very subtle, some are not; whatever they are, they ought to be recognized and addressed by those preparing the proposal. I cannot think of a better way to get the proposal to appeal to the interests of the customer than to have the capability manager draw out the contributors, review the drafts, and suggest ways of making the proposal sell itself. In this capacity, his purpose should be to question, to probe, and to suggest. This is a vitally important addition to a proposal effort. An objective point of view is usually the rarest commodity in a proposal effort. It should be clear that I am not suggesting that he be the proposal manager—only the proposal manager's consultant.

As this job description indicates, the capability manager ought to have both a technical and a marketing orientation—technical enough that he can understand and communicate with the technical community, but not so technical that he poses a threat to his associates. In addition, he needs to be heavily enough oriented toward the marketing function so that he can exert this influence.
Advantages and Cautions

What are the advantages of this arrangement? Why should it work any better than the sales department approach?

Aside from the broader responsibilities that might be executed, this arrangement has two important values:

1. It permits better focusing of marketing attention to given areas of business. Executives can get to the facts easily. It is easier to see who in the organization is accountable for pursuing discrete areas of business.

2. It helps to break down the psychological wall between marketing and engineering. A number of companies have placed their salesmen in the technical department—some organizationally, some only physically. In all these situations the salesman has become part of the technical group—no longer the outsider. With this experience in mind, it should not be too difficult to appreciate the advantage of the proposed environment. The salesman rapidly becomes intimately involved and familiar with the thinking of the engineers he is trying to serve; he becomes more knowledgeable in his dealings with them and in his dealings with the customer. The source of conflict has disappeared, and team spirit has taken its place. In one company where, because of space limitations, the salesmen were going to be separated from engineering and relocated in another area (as they had been once before), the engineering manager arranged to double up on office space to ensure that the salesmen would not be relocated. Also, some salesmen in technical departments point out that the customer appears to accept them more easily as representatives of a technical operation than of a marketing department.

I fully realize that this proposal eliminates the central sales department. One could argue that, in this period where there is a lack of experienced marketing personnel, it makes little sense to scatter the existing experience over different corners of the company. However, it seems to me that the issue is not whether the sales department is maintained intact, but whether the marketing function is to be executed intelligently.

Of course, simply assigning the new responsibilities I have described to an individual will not get the job done. What is needed, above all else, is that the company’s management be convinced that the capability manager is the proper focal point for certain needs and problems. Management not only has to support him on individual projects, but in addition has to promote the capability management concept to all the people in the company who are affected. In particular, the technical or business manager has to create the atmosphere in which the capability manager can operate and exert influence. If this is not done, the capability manager becomes a useless clerk.

One additional caution: the engineering department must be structured in a way that will permit this arrangement, i.e., around market or application areas rather than technologies per se. For example, a communications company might organize around airborne communications systems, ground-based communications systems, and spaceborne communications systems (as opposed to, say, modulation techniques, channel characteristics, component miniaturization techniques, and so on). While this arrangement may require some overlap of technologies, it better focuses the creative talent of engineers on the needs of the market.

Conclusion

Our present approach to marketing R&D to the defense and space agencies contains serious shortcomings. It seems to me that we have incurred large marketing expenditures without fitting the marketing approach to the buying environment. As competition grows keener, these inadequacies will become more costly. We simply will have to find new ways to approach the marketplace.

In this paper I have suggested the concept of capability management as a means of meeting this need. This concept gives us a new way of looking at the total marketing effort and a new way of focusing on those people we hold accountable for different parts of the job. It may require changes in the organization of some companies and create wholly new relationships for some people. But it will establish a solid foundation on which to build a meaningful marketing program.