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# MARKETING SCIENCE

EDITOR ■  
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## Education for Marketing Science

Last Summer a high school senior in Amsterdam, New York, read an article in the *New York Times* about mathematicians working in the advertising business. She was interested, as most seniors are, in planning for college and career. The article seemed to capture her imagination and after school opened in the Fall, she sent me a letter asking for suggestions on how to prepare for a mathematical career in advertising.

Receiving this letter made me realize that questions of this type are almost universally asked in a way which betrays a misunderstanding of the educational process. For instance, young people who ask me questions about education for marketing or for mathematics usually ask what schools I would recommend. They ask what courses they ought to take. They ask about the best summer jobs to seek. These questions seem to me to suggest the questioner has the opinion that there is some magic formula for learning to be a success in marketing, advertising, or mathematics; that if one attends the right school, takes the right courses, and gets the right summer jobs, he will come through it all as a valuable automaton who can command high prices to do a prestigious job. If I have learned anything from watching careers, it is that such an attitude leads to mediocrity.

The prevalence of the specialized education syndrome is evidence that our educational system is failing our youth. Those who get through it without losing this automaton perspective are poor employees. Recently I had to fill a job opening for a senior statistician. I found that the process was very discouraging because more than half the people who applied tried to state their qualifications in terms of the courses they took in college and graduate school. These people were those who had failed to rise above upgraded clerical jobs. The reason they had failed is that they had spent their energies learning how to do statistics. Such training, while essential for my purposes, was of peripheral value when compared to other characteristics. In an operation devoted to trying to develop theory about marketing and turn it to practical advantage for the company, knowing "how to" is hardly sufficient. Instead, people for such jobs must have considerable skepticism and curiosity. They must like people and try to understand them. They must have an unusual combination of scientific rigor and entrepreneurial sense. They need creativity and imagination.

Our schools don't know how to educate people to have these traits. In fact, they seem to be singularly successful in ridding the students of most traces of such valuable personal assets. The education world is just waking up to this significant failure. The concern with the subject has been documented in a semi-popular presentation in a book called *How Children Fail* (John Holt, Pitman, New York, 1964). This book, interestingly, was not written by some member of the Education Department but by a classroom teacher who didn't major in Education in college. John Holt has been very perceptive in watching how children behave in his classes. When he wrote the book, he presented the anecdotes from his classroom experience which showed that the problem for many kids is the teacher's insistence on knowing the "right" answer. This places high value on learning "how to" get the right answer, and even higher value on finding shortcuts. Children are very inventive in devising their short cuts, but since they frequently don't understand the problem, they often get things wrong. This is particularly troublesome because the insistence on answers motivates kids to invent methods rather than to understand, but their failures at this task are met with ridicule. The effect is to discourage creativity and inventiveness because it is so often subjected to ridicule and to place the greatest rewards on learning "how to" rather than on understanding.

If my own experience in management and management science tells me anything about education beyond the public school, it is merely that the colleges and universities do a pretty good job of continuing these same forces on students. The students graduate and go to work, sometimes for me, and I find they arrive overly sure they know "how to" do the job, afraid to expose what creativity they have left, and frightened of speculation. In the business world, the same pressure for methods and answers often continues, so that young people embarking on careers are reinforced in the common choice to become what William Whyte called "The Organization Man." This breed of men is merely the business analog of the teacher's pet, and he exists for the same psychological reasons.

It would seem that these considerations are of extreme importance to management science and marketing. There is probably no area of company operations where creativity and imagination have higher payoffs than in marketing and advertising. The difficulty in finding and using people who have these desired qualities is a problem not only of the educational system but also of the practices of management. It should be a matter of great concern to the management scientists to find effective ways to harness creative energy and to reward it within the context of running a business efficiently. It should be a matter of great concern to all of us, whether in management, or management science, or education, to find ways to identify and encourage the exercise of creativity in our youth.

One thing we can do is to answer letters and requests from youth for advice on their education with points like the following taken from my answer to the young lady in Amsterdam.

1. Try to attend a good liberal arts college or pursue a liberal arts degree at a university. Breadth of knowledge is extremely important and it is difficult to obtain in specialized schools.

2. Major in mathematics (or make it a strong minor). Include courses on probability theory, statistics, matrix algebra. Try a course on modern art or music. And be sure that you take at least one course in psychology.
3. If you're still doing well and willing to try it, get some graduate school work in. Here, you can specialize. For instance, you might try for an MBA in marketing.
4. Through it all, be a skeptic. Try to use your education to help you understand people. Try to see how one academic discipline is related to the others. Don't believe that things must be the way the professors describe them, for they are telling you the conventional wisdom—the way they think things are. They may be wrong and often are. Of course, remember what they say and enjoy the challenge of explaining things, because that gets good grades.
5. Enjoy yourself and enjoy people. You can never be a success in advertising if you don't like and respect people. And you can learn more about people from people than from books. Books merely help you to organize your experience."

These are lines written for a girl who wants a mathematical career in advertising. They seem, however, to be quite applicable to many other careers involving management science.

## The Mailbag

Since the last column was written, I received the following letter which suggests a corollary to Longman's Law.

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### To the Editor:

Your new column in the August issue of *Management Science* was intriguing to say the least. To "Longman's" Law (I assume no one else has claimed responsibility for it yet) I would add a corollary. "The operational *value* of a marketing model is *inversely* proportional to the number of variables."

While I make no claims to having originated this idea, I think it is an excellent one. The operations researchers involved in marketing areas try all too often to fit a complex mathematical structure to a simple problem. While some executives will accept such complex models, the marketing manager is usually a practical individual who likes to understand what is going on.

Let me give a simple example illustrating both Longman's Law ("the more relevant an item of information, the more difficult it is to measure") and the proposed corollary; the problem, briefly, is how to increase sales in a company which sells several related products through a large dealer organization.

Solutions were proposed involving suggestions to increase advertising, cut the price, offer more "deals" in the form of coupons, offer better credit, etc. We found it difficult to measure the effect of price cuts, for example, because of competitors' responses. Longman's Law clearly held. What we finally did was estab-

lish a simple measure of relative sales effectiveness in utilizing an *existing* customer base. This was done as follows:

1. We computed the ratio of buyers of a particular product from among those able to buy as the following ratio:

$$B_i/A_i = R_i$$

where

- $B_i$  = # of customers who do buy product  $i$   
 $A_i$  = # of customers who are available to buy product  $i$   
 $R_i$  = measure associated with product  $i$ .

The values of  $A_i$  and  $B_i$  were determined easily from dealers' customer lists. The products were such that not every customer in this so-called "dealer customer base" had a need or a potential use for every product (as to require diesel fuel implied the presence of a diesel vehicle).

2. The second step was to compute an aggregate measure of a dealer's effectiveness over all products by taking the arithmetic mean (this procedure is so naive, I almost hate to report it). The result is an index

$$\sum_{i=1}^{N_T} R_i/N_T = I_T$$

where

- $N_T$  = the number of products in the line at time  $T$   
 $I_T$  = the index at time  $T$ .

3. The final step was to rank these indices over all dealers. The high indices, of course, indicated a good utilization of the entire dealer's customer base. Low indices *may* indicate a large proportion of relatively new customers who are presently only buying a single product.

Now that we had this fantastic array of numbers, the question was asked (as we were afraid it would be): What is the *value* of all this? Here the corollary proposed above was used, as the operational value of this index was tremendous. During the course of the study we had interviewed some of the dealers and noted certain *personality* characteristics. Those with high indices of sales effectiveness were a relatively homogeneous group.

This is a simple example but leads us to ask, can we build an axiomatic Science of Marketing through such laws as:

"The more relevant an item of information, the more difficult it is to measure,"  
and

"The operational value of a model is inversely proportional to the number of variables?"

Shall we add more?

Gerald R. McNichols  
Burke, Virginia

Mr. McNichols' letter presents a principle for marketing modelling which would seem to be true quite often. Whether it is a corollary to Longman's Law,

however, seems a little questionable. The problem of marketing science which McNichols' Message makes clear is that operational viability depends on simplicity of approach while explanatory power may depend on the opposite. People in marketing science are in the awkward position of being damned if they do and damned if they don't. A simple model which has operational viability is often criticized by other marketing scientists as being too simple minded. More complex models with great explanatory power are criticized by managers as impractical. The resolution of this conflict is, itself, an operations research problem. It is a question of optimizing the personal payoff for the marketing scientist.

This issue's questions for reader comment seem to be:

1. Is there a problem in education for marketing science?
2. If there is, have I defined correctly or sufficiently?
3. If so, what could be done about it by management scientists, managers, educators, and students?
4. Is McNichols' Message a corollary to Longman's Law?
5. How could we choose the path out of the conflict of operational viability vs. explanatory power?

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