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EDITORIAL

MARKETING HYDROLOGY

INTRODUCTION

Attendance at marketing seminars and courses has recently become very fashionable among public servants, and the cynic might be forgiven for thinking that this is just the latest fad — the successor to corporate or strategic planning — which will in its turn be supplanted by a yet newer fad.

However, the less cynical might see this growing interest in marketing as a new responsiveness to those whom public servants are paid to serve — in other words, as a growing professionalism which has brought a concern for setting objectives, reviewing performance, and managing in a “results-oriented” rather than “activity-oriented” fashion. After all, marketing may be defined, in simple terms, as (Wills et al, 1983):

the way in which an organisation matches its human, financial and physical resources with the wants of its customers

Recent changes in administration and funding of water and soil resource management in New Zealand have certainly prompted a rapid adoption of the “marketing approach” by many public sector hydrologists, a process which was already under way before Roger Douglas unleashed “user-pays” on a largely unsuspecting public service in May 1986.

My purpose in this commentary is to examine the principles of marketing from the hydrologist’s perspective, and suggest ways in which the concept may be applied in a beneficial way.

MARKETING

Marketing may be defined, in more formal terms, as (McCarthy and Perreault, 1984):

the performance of activities which seek to accomplish an organisation’s objectives by anticipating customer or client needs and directing a flow of need-satisfying goods and services from producer to customer or client.

This definition is valuable because it directs attention to some crucial aspects of marketing, and de-emphasises the common misconception that marketing consists primarily of persuading others to buy whatever one happens to produce,

using, in particular, advertising to "get the message across". The definition emphasises, instead, that marketing begins with customer requirements, not the existing production process, and that marketing in its broadest sense provides direction for production. In fact, P. Drucker (1973) has suggested that "the aim of marketing is to make selling superfluous"; in other words, if the producer has correctly anticipated customer needs and set up an appropriate production process, then the product will be so attractive to the customer that no persuasion to buy it will be necessary.

To achieve this match between the customer's needs and the organisation's capabilities, a number of components of a marketing strategy may be involved, such as:

- collecting market information
- financing and risk taking
- standards setting and quality control
- storage
- transport
- buying and selling

These activities all have equivalents in hydrology, even in the public sector, and it should be emphasised that a marketing approach is as necessary in a non-profit-making as in a profit-making organisation, and in the public as in the private sector. In fact, it may be argued that marketing is even more necessary in non-profit-making, public sector organisations, because the primary signal which indicates the balance between demand and supply — price — has not been available, and the supplier must therefore be even more sensitive to customer requirements.

In broad terms, marketing is said to focus, from the customer's perspective, on "The Four Ps" —

- Product
- Place
- Price
- Promotion

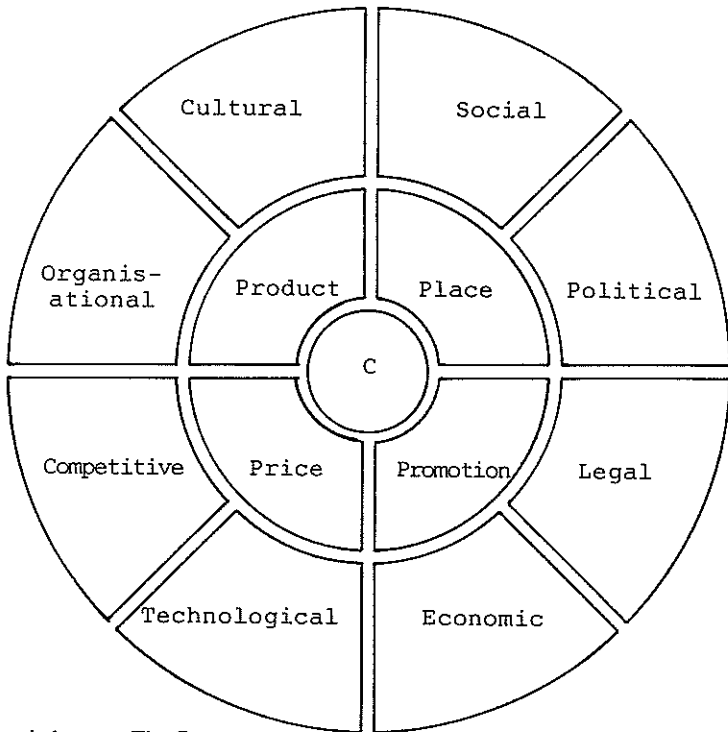
The marketer must ensure that his product is what the customer requires, when and where he requires it, at the right price, and promoted and packaged in a way that is attractive, credible, and convenient. In turn, these elements of a marketing strategy must be assembled with due regard to the environmental constraints in which the organisation operates:

- cultural and social
- political and legal
- economic
- technological
- competitive
- organisational mission and goals.

This perspective, which places the customer firmly at the focus, may be neatly summarised as in figure 1.

MARKETING HYDROLOGY — THE CUSTOMER'S NEEDS

Hydrologists work in a number of types of organisations in New Zealand, and it is not always obvious who the customer is, let alone what his needs are. Perhaps the easiest to consider is the University based hydrologist: his



Inner circle:— The Customer
 Middle circle:— Elements of the marketing strategy
 Outer circle:— The Environment

FIG. 1: The elements and environments of a marketing strategy.

customer is the student, and his product is knowledge . . . But is it? It seems to be a (perhaps regrettable?) fact that many students attend university for reasons other than to simply develop their own reasoning faculties; to obtain a qualification useful when seeking employment, or to delay having to seriously consider exactly where one is going, are rather common motivations.

This leads to mention of the "hierarchy of needs" referred to in most marketing textbooks. It has been suggested that people have different levels of needs which motivate their behaviour. A. H. Maslow (1954) proposed a widely-known hierarchy; a simpler hierarchy is the "PSSP needs" illustrated in figure 2. This theory of motivation (which is by no means universally accepted) suggests that, as lower-level needs are reasonably satisfied, those at higher levels become more dominant. However, a particular product may simultaneously satisfy more than one need, higher-level needs may develop before lower needs are satisfied, and the order in which needs are satisfied can vary between groups.

Perhaps hydrologists in other organisations, such as consulting engineers, may more easily define their customer's needs, since personal motivation may

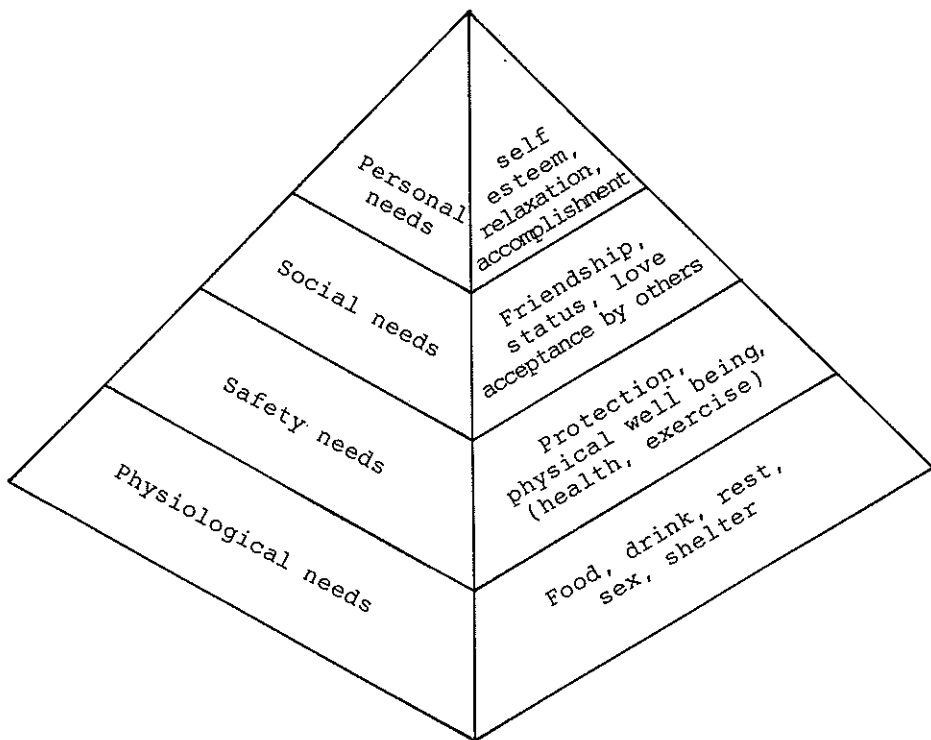


FIG. 2: The 'PSSP' model of the hierarchy of personal needs.

be of lesser significance than purely economic considerations (but of course, the personal goals and attitudes of the individuals with whom one deals do not necessarily reflect the objectives of the organisation for which they work). Normally, hydrological information has been required for design purposes — for hydro-electricity, irrigation or river control schemes, for a water allocation plan, or for a waste discharge proposal, for example. Ostensibly, the hydrologist's customer is the consulting engineer or water resources officer, but of course this customer may in turn have a client organisation further along the line (the consulting engineer working for a territorial local authority, for instance), and in the end the New Zealand public is the customer. Does this make any difference to how the hydrologist approaches his task, and his assessment of the customer's needs? (It should not be forgotten that a crucial part of marketing is assisting the customer to define his needs. The hydrologist should not assume that, for example, consulting engineers invariably know what they, and their "downstream" customers, *really* need). In some respects, the hydrologist is providing not *information*, but *security* or *peace of mind*. Thus, for example, a farmer may be less concerned about exactly what the mean annual 7-day minimum flow is than what the risk is that he will receive no water during

the peak growing season. Perhaps the shocks which floods and droughts bring to the public would be reduced if hydrologists were aware of what the public *really* wants from them, and supplied those wants.

And if those wants cannot be supplied (eg, the hydrologist cannot guarantee a certain level of security), then the public may have to reassess its behaviour.

Of course, much hydrological activity in New Zealand is driven by the statutory provisions of the water and soil legislation, the Soil Conservation and Rivers Control Act 1941 and the Water and Soil Conservation Act 1967, and their amendments. However, to a large extent these Acts are enabling rather than mandatory, and lay down very broad principles. Thus, Section 14(4) of the 1967 Act states that two of the functions and powers of the National Water and Soil Conservation Authority are:

- a To organise the establishment of records of availability, volume, and location of resources of natural water, of existing rights to natural water and other water, and future requirements in respect of natural water, and of such other matters as may seem useful as a basis for allocation of natural water between competing demands, and to ensure that the information is made available to interested local authorities.
- k To carry out hydrological research, and to promote research in matters where, because New Zealand conditions may differ from those upon which work has been done overseas, there is a lack of research data which would enable the applicability of overseas work to New Zealand conditions to be assessed.

Similarly, Section 20(5)(f) defines one of the functions of a regional water board as:

As directed from time to time by the Authority, the board shall collect, sort, and record data on resources and availability of natural water, and shall supply to public authorities and the public information so collected.

It would have to be said that public sector hydrologists have not carried out these functions as well as they might have. Undoubtedly, vast quantities of hydrometric data are available on the Common Archive administered by the Computer Archives Unit of MWD, and on the complementary regional archives maintained by regional water boards. However, one would have to question whether a number of the components of an effective marketing strategy referred to above have received adequate attention. For example, it is only within the last year that a deliberate effort has been made to redefine national requirements of a hydrometric data collection programme, resulting in preparation of two unpublished discussion papers by G. McBride and M. P. Mosley, under the auspices of the Operational Hydrology Steering Group.

Although hydrometric sites are regularly opened or closed, it seems that many such adjustments to the "system" of sites have been on an *ad hoc* basis, with little thought given to national needs. The need for a national perspective, for rationalisation (in its true sense) of the hydrometric programme, and for complementarity of the various agencies was, of course, a basic conclusion of the Operational Hydrology Seminar held in May 1985, and also of the Baumgart-Kneebone review of Water and Soil Directorate in 1982.

With redefinition of the role of the NWASCA consequent upon the 1987

Budget, the opportunity is being taken to reassess hydrological information requirements for national planning and resource assessment purposes, as well as for major project design and operation.

The need to define user needs (collect market information) in order to enable planning of a hydrometric programme is just as great for regional agencies and consulting engineers. Failure to adequately carry out this first step may, and sometimes does, result in an inability to provide the required information at the end of the programme, or the need to modify the programme during its duration.

A closely related part of a hydrological "marketing strategy" is standards setting and quality control. This again, has only recently been seriously addressed in New Zealand hydrology, as an outcome of the Operational Hydrology Seminar. Discussion papers have been prepared by R. D. Henderson and A. I. McKerchar (1987) and M. P. Mosley (unpublished MWD report); the latter has gained acceptance by the Operational Hydrology Steering Group and the NWASCA as a blueprint for quality assurance of hydrometric data required for national purposes.

There are major costs involved in failing to attain precisely the quality of data required by the user: data of a quality greater than is required are more expensive than necessary to collect, whereas data of a quality lower than required introduce uncertainties in data use and, at worst, severe costs such as construction of an inadequate spillway or inefficient operation of an irrigation scheme which requires more water than is actually available. The market-oriented hydrologist will ensure that he and his customer agree on exactly what quality of information is needed for a given purpose.

In a similar way, all the elements of a marketing strategy which might be prepared by, say, a car manufacturer, can be seen to be relevant to marketing hydrology. The fact that so much thought has been given in recent months to such questions as access to databases, charges for data, the optimal administration of databases, and quality control indicate that hydrologists had not, in the past, given sufficient attention to "matching their technical capabilities with their customer's needs", and that a move towards a marketing approach will be beneficial.

THE "MORE MARKET" APPROACH

The Government's economic liberalisation — the "more-market" or "user-pays" approach — of the last three years is based on a belief that the market should be allowed to establish as far as possible the most efficient distribution of resources. Price is said to provide the best indicator of the balance between supply and demand; the Treasury report "Economic Management" (1984, p 277) states:

Appropriate pricing of the output of State owned enterprises is an essential precondition for ensuring resources are put to their best use. The key requirement is that the price of output should cover the full cost of supplying it, including the cost of capital. Such pricing ensures that purchases, and consequently production, are undertaken only to the extent that the value the user derives is at least as much as the resources used.

To the extent the Government considers that the output in question has a value to the community over and above its value to the user, a subsidy might be justifiable to reduce the price and thus increase consumption . . .

The second paragraph quoted above allows for the fact that there may be cases of "market failure", where free operation of the market will not maximise economic efficiency or social equity. There are many possible examples of market failure in hydrology; for example, investment in hydrological information may be socially beneficial but privately unprofitable, because private enterprise cannot fully appropriate the returns from such information.

In cases of market failure, a Government may intervene in a variety of ways, such as subsidy, regulation or public production of a good. In fact, the operation of the free market is impossible without some degree of Government intervention—in particular, to enforce property rights by providing law and order, and providing basic infrastructure such as roads—and the appropriate question is not "should the Government intervene?", but "what set of rates, regulations or other interventions is most appropriate?" (to obtain efficiency and equity). The Treasury (1984) view is that "it is in areas where economic efficiency concerns are *not* dominated by alternative goals that increased use of the market may be advantageous", and the principles which underlay the 1986 Government Expenditure Review were stated to be (p 10) "as much concepts of fairness as they are principles aimed at improving efficiency. It is unfair to the taxpayer, to existing and potential competitors, and to the customers of State trading enterprises, for the Government to be subsidising inefficiency in its own operations."

It can be seen, then, that the hydrologist should continue to expect pressure for the resources devoted to hydrology to be justified, via the pricing mechanism, by the actual demand for his products. Only if there are goals other than efficient distribution of resources amongst competing demands can government intervention be expected to continue.

This returns us to what appear to be the two greatest marketing needs in hydrology at present. Firstly, hydrologists must accept that they will have to compete to an increasing extent for scarce resources, and so will have to persuade their "users to pay" for their products. This is where marketing in its widest sense will be required, to ensure that the products meet the customers' needs. Secondly, hydrologists must be able to demonstrate where "market failure" justifies some form of government intervention. In a sense, a marketing effort will again be required, this time directed towards Treasury and the Government. Its purpose will be to persuade the holders of the purse strings that hydrological information has sufficient value to the community, over and above its value to immediately identifiable users, that economic efficiency is not the only goal to be achieved, and that intervention is justified.

During the last 20 years, there have been numerous attempts to establish the value of hydrological information, commonly as contributions to the design or rationalisation of hydrometric networks. These have tended to show that value can easily be estimated only for a rather well-defined project; the value of (and hence acceptable expenditure on) a general-purpose monitoring network is very difficult to estimate. It is for this sort of public interest activity that appeals to market failure are most likely to succeed, because the benefits are, to use economic jargon, "non-appropriable" and "non-excludable".

CONCLUSION

The Treasury and the Government have been very clear in setting out the underlying principles and objectives of the "more-market" approach to economic activity. The intention is, as far as possible, to let the market decide the allocation of scarce resources between competing users, but to permit government intervention where cases of "market failure" and the primacy of goals other than economic efficiency can be demonstrated. Hydrologists therefore have little excuse for not adopting a marketing approach. Hydrologists cannot expect Treasury officials — "mere laymen" — to intuitively understand the benefits of hydrological information, particularly to future generations, without their assistance. But if, as we no doubt all believe, our product is a valuable one, then we should have no difficulty in convincing users or Government that they should pay.

M. P. Mosley

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