

Marketing Secondary Information Products and Services

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Even though information products and services are like consumer products and services in many respects, there is little in the literature about their marketing. This is true for both the information and the marketing field. Yet, aspects of information products and services marketing are extremely interesting and challenging. Some of those aspects discussed in this article are the components of marketing (i.e., consumer market, new product development, sales, advertising and promotion, packaging, channels of distribution, pricing and marketing research), how information products and services relate to those components, and the pricing of multiple products produced from a bibliographic database.

A Conceptual Marketing Model for Secondary Information Products and Services

The marketing environment for secondary information includes the end users, the intermediaries, the database producers, the database vendors, and the user organizations. The ultimate market is the *end user* or scientists, lawyers, teachers, physicians, and businessmen who are the beneficiaries of the secondary information, although they may not actually use the secondary information products or services because an *intermediary* such as a reference librarian, aide, or information broker may actually conduct searches on their behalf. Other participants include *database producers* who abstract and index primary materials (or acquire the abstracts and indexes), process them, and distribute them in many potential forms. In addition, there are *database vendors* who obtain database computer tapes through licensing agreements, convert them, and provide online and other searching for a fee. Still another type of participant is the *user organization* that purchases database computer tapes to perform in-house searching for their staff. The conceptual marketing model of abstracting and indexing services appears in Figure 1 which covers the flow of secondary information among these participants.

At the top of the schema is the consumer market; this consists of end users of the secondary information and the users who actually purchase the secondary products and services. Abstracting and indexing (A&I) services sometimes use marketing research techniques to learn about the consumer market; identify new products and services; determine pricing strategies; establish sales, advertising, and promotional methods to employ; and learn about the channels of distribution. Database producers acquire primary materials to process for inclusion in their databases. Once in the databases, the processed material can be produced as printed materials. The databases may then be sold to some organizations or sent to database vendors under a licensing agreement. Database vendors normally purchase the tapes at a price ranging from hundreds to tens of thousands of dollars. They also pay royalties to the database producers based on complicated formulas that are a function of line charges, number of searches (or queries) performed, and/or number of items identified by the searches.

Three marketing channels of distribution thus may exist: (1) database producers, intermediaries, and end users for published materials; (2) database producers, vendors, intermediaries, and end users for online searching; and (3) database producers, organizations, and intermediaries, and end users for database tape sales. Motivation to purchase and use secondary products and services depends on specific attributes associated with those products and services such as completeness, quality of abstracting and indexing, format, and currency of items; the price; and awareness and attitudes created by advertising, sales, and promotion. The motivation leads to purchases which in turn lead to use of the secondary products and services.

Marketing research often involves a feedback to participants concerning the use, behavior, and attitudes of users and end users or other participants in the system. Marketing research can be used to provide information for making decisions in product research, new product development, services development, sales, advertising and promotion, channels of distribution, and pricing.

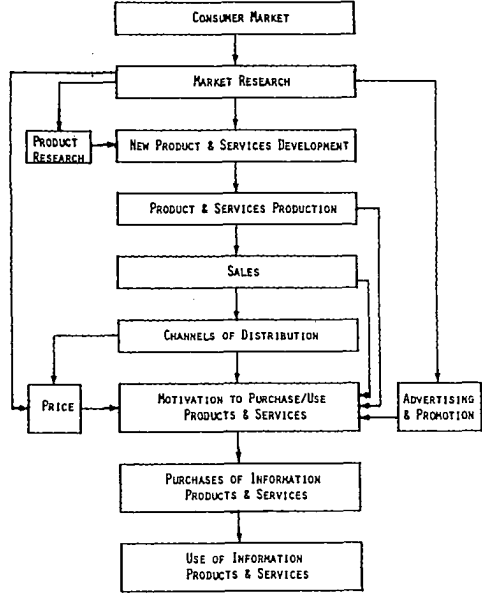


FIG. 1. A conceptual model of the relationship of market components of secondary information products and services.

Several methods employed in consumer marketing research currently are, or could be, used in the information field.

The most basic form of marketing research involves the assessment of secondary sources of data, that is, data already collected, say, by the government. Such secondary information would include data about the marketplace, for example, the number of scientists, engineers, physicians, lawyers, libraries, or brokers [1,2]. Perhaps more important are trends and forecasts of the growth of the market [3,4]. That information can be obtained from secondary sources which provide information about the growth of specific secondary products or services, for example, the amount of bibliographic online searches performed or the number of databases available for searches by computer [5]. Still other important secondary information can provide analysis of new technology and the effect that new technology might have on secondary information products and services [6].

Additional methods of marketing research include in-depth group interviews, surveys, and audits. In-depth group interviews involve bringing together a group of eight to ten persons to discuss issues of interest [7,8]. Such research usually involves a highly trained inter-

viewer who sits with users and discusses their information needs, behavior patterns, biases, and attitudes. These interviews are particularly useful in assessing new information products and services or their concepts. This form of research is also useful in formulating hypotheses that require testing on a broad basis. For example, in a group interview the interviewer might find that users feel certain performance is essential (e.g., in online retrieval, recall is more important than precision). Since the group interview involves only a small number of persons, it is important to test that result on a larger sample which can be projected statistically to the entire population.

Marketing research surveys are conducted with users or other participants in the system. The surveys—frequently referred to as user studies—can be performed in a number of ways; these include personal interviews, telephone interviews, self-administered questionnaires mailed or delivered to respondents, or a combination of these methods. Which of these methods is best depends on the type of questions asked, the length of the questionnaire, and the cost of the data collection. Usually more lengthy questionnaires that include questions requiring interpretation or which can not be preceded are administered with personal interviews; however, the cost of such questionnaires is high. At the other extreme, mailed questionnaires must be brief and easily understood or one cannot expect more than a 10–20% response rate—a rate that may ruin a survey result. However, that method is far less expensive. A technique used more frequently is the telephone interview, a method that ranks between personal interviews and mailed questionnaires in terms of expense and capabilities.

Two other methods employed in consumer marketing research, but not yet used in the information field, involve panel studies and audits. In panel studies a group of respondents—for example, from 1 to 5000—agree to answer questions on a periodic basis in order to report purchasing behavior or advertising effectiveness. Other points along the consumer distribution channels are also observed. One such point involves a service called warehouse withdrawal; it provides an indication of sales (and therefore brand share) by noting orders that come in from stores. In store audits the sales of a store are observed by counting the store's supplies periodically, say once a month. This technique provides an indication of trends in sales and brand share. A similar type of service could be employed for bibliographic services, such as online searching, by observing activity in libraries. This kind of audit would be extremely useful to database producers.

As shown in Figure 1, marketing research can assist in new product research. Initially, the need for a new product can be determined by surveying the consumer market. For example, it might be determined that a cumulative index is needed or that a bibliographic product should be made available online. Specific questions concerning product attributes such as format, extent of coverage, frequency of distribution, currency of input, and

accuracy of input can be studied initially through in-depth group interviews and hypotheses, then tested through a survey of users and end users. Studying such attributes through marketing research can be useful to new product and service development as well as production. While production research can determine cost, performance, productivity, and efficiency, the market research is necessary to determine the effectiveness of the new product or service [8].

Marketing research is also useful in sales, promotion, and advertising. Here sales is meant to be the direct sales through salespersons. Secondary services have used direct sales increasingly in recent years. Some database producers and vendors also employ sales agents who sell their products as well as other products on a commission basis. Promotion includes such activities as exhibiting products and services at conferences and professional meetings and training users in the use of the products and services. Such promotion obviously can result in sales. In advertising a particular message is conveyed to users or potential users. The message may announce new products or services, try to make new users aware of products and services, or merely reinforce knowledge about them. The medium most commonly employed by secondary services is an advertisement in journals, newsletters, or information news media that go to libraries and other information organizations. Direct mail advertising is often used when new products and services or modifications are announced.

Marketing research can be used to help determine how extensive a sales force should be, where it should be located, what sales "pitch" ought to be employed, and how effective the sales activities are. Surveys can determine opinions and attitudes which can be corrected or reinforced, if necessary, through direct sales, advertising, and promotion. Surveys can also determine market potential by establishing who the potential consumers might be who are not aware of the secondary products and services. These consumers might have certain attributes (for example, scientific discipline, geographic area, age, or type of population). By determining these attributes, one can focus sales, advertising, and promotion directly on the potential market.

Marketing research is also useful in determining the effectiveness of channels of distribution. For producers of secondary services such as databases, the channels of distribution include database vendors, libraries, brokers, university departments, or other groups within organizations. One example is the university's chemistry or physics department that has lately increased its online searching because a recent government grant to the department permits the cost of terminals (for other purposes) and the cost of searching. By having this feedback, database producers can sell, promote, and advertise their products and services to specific market segment. Because database vendors are reluctant to inform database producers about the users of their databases, the produc-

ers must obtain this information through marketing research.

Economic Aspects of Marketing Secondary Information Products and Services

As mentioned previously, motivation to purchase secondary products and services leads to their use. This motivation is based on awareness of and attitudes toward the products and services and their attributes such as completeness of coverage, quality, and format. Awareness and attitudes can be altered through sales, advertising, and promotion. However, price is also an important factor that will affect motivation to purchase and/or use a secondary product or service. A number of economic relationships exist throughout the marketing of secondary products and services (see Fig. 2). Economic relationships are shown by solid lines and other relationships, discussed previously, by broken lines. For database producers, the economic lines lead to income and cost which together determine net income (profit or loss). The extent of the desired net income depends to a large degree on the type of database producer or other participant.

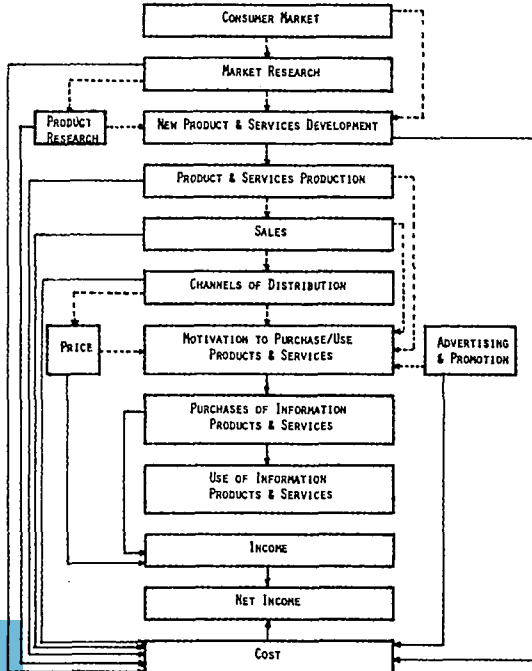


FIG. 2. A conceptual model of the economic relationship of market components of secondary information products and services.

Database producers range from government agencies that usually attempt to recover distribution costs [9,10], to nonprofit abstracting and indexing services that at least need to break even, to profit organizations that need to make a profit to gain a return on investment.

Costs of secondary products and services result from a number of activities: product and service production; sales, advertising, and promotion efforts; distribution to the various participants in the channels of distribution; product research and development; and marketing research. The costs can be subdivided into one-time fixed costs—"fixed" costs that vary over time such as input to the databases, and indirect costs, i.e., rent, equipment leases, etc.—and costs such as copies of publications and copies of database tapes that vary with the quantities demanded. Income to database producers comes from the price charged and the quantities demanded of published products, online royalties, and database tapes. Increased sales obviously increase income, but they increase costs as well.

It is useful to consider price as the amount of money (or possibly some goods) needed to acquire, in exchange, some product and its accompanying services. This definition would help to remind one that a price is simply an offer, a suggestion, or an experiment to test the pulse of the market. The users may accept the offer or reject it. No price should ever be considered permanent. Pricing of bibliographic services and products is complex. Usually prices are not set according to the dictates of economic theory; rather, pricing thus far has been an art, and pricing decisions reflect a blend of intuition, past experience, and analysis. For example, database producers make their decisions in an environment that includes other database producers, database vendors, libraries and other search service intermediaries, and end users. The price the database producer sets will influence all of these participants.

Similarly, database vendors must take into account the database producers and their royalty requirements, the number and proximity of substitute services available to users, the budget levels of various classes of users, and the pricing activities of other vendors both public and private. Vendors must also consider the likely reactions of related businesses, such as telecommunications services, to their pricing decisions. Finally, the search services must take into account the vendors' charges, the database producers' royalty fees, the information needs and income level of its various classes of users, and the prices that will be set by other competing search services and information brokers. Those factors are all related components of the supply operation. For the system to function smoothly, no one link should charge too much or too little. Prices set too low will fail to provide the necessary funds and incentive for the producers and distributors. This process is further complicated by the presence of both public and private organizations competing in all four participant groups. Consequently, a variety of price-

ing objectives is reflected in the prices charged for database royalties, lease, or license; for database access through vendors; and for online searches of the databases by search service intermediaries.

It is well recognized that organizations operate according to many different objectives, explicit or not. There is a wide range of pricing objectives for organizations: profit maximization in the long or short run, the requirements that supply cover all or variable costs, and pricing to discourage frivolous use. Much work needs to be done to identify the nature and to quantify the extent of the demand for secondary products and services. It is difficult to assess the demand for a service accurately; however, common marketing research approaches to estimating the likely reactions of customers to a price change include direct attitude surveys, statistical analysis of the relationship between price and quantity market tests, and analytic inference. Evaluating pricing strategies for bibliographic products and services is very difficult—as it is for almost any consumer product or service. To begin with, it's virtually impossible to establish a relationship between price and quantity demanded, even over short ranges of price. However, attempts have been made to establish such a relationship and several models have been employed to estimate it.

A particularly simple approach to the evaluation of pricing is merely to observe the prices of a product or service over the years and note how price changes affect the quantities ordered or the extent of use of a service. The problem with this method is that other factors enter into the purchases of the bibliographic publications. One frequently mentioned factor is the rapidly increasing use of online bibliographic search services. However, there may be other factors as well, such as a decrease in the number of persons (and libraries) that are interested in the field covered by a bibliographic publication. Another factor may be the introduction of a competitive product, such as citation indexes. There might also be a decrease in quality of the content of the bibliographic publication or of its appearance, or the items indexed and abstracted might be out of date.

More sophisticated pricing models can take into account these other factors as well as price. An example of such a model is multiple regression developed by Berg [11] to estimate demand (i.e., subscriptions) for a scientific journal as a function of such variables as size of the journal (pages), number of scientists in the field, membership in a professional society, and price. Another example of a multiple regression application involved a study by Charles River Associates, Inc. [12]. They attempted to identify and establish factors that explain the probability that scientists in a particular field would subscribe to their most important journal. A different potential model for assessing pricing of bibliographic products and services is called conjoint measurement. This model, used in marketing research, attempts to quantify the value systems of users [13]. The conjoint measure-

ent model relies on users' indicating their preferences for different prices at different levels of recall, items retrieved, and response times. A statistical model then determines the relative "utility" of each attribute.

The Dilemma of Pricing Multiple Products from a Single Database

One problem database producers face is the dilemma of pricing three or more products or services derived from a single database [14,15]. The typical case is the one in which a database producer sells online services through a vendor, a bibliographic publication, and database tapes—all from the same database. The problem here is that those products and services compete with each other. The extent of purchase of a product or service varies with the price; therefore the cost, income, and net income are all affected. Libraries can use an economic base to choose ways in which to conduct bibliographic searches [16].

The several alternatives for searching include using a broker, manual searching only, online searching (from a vendor) only, an in-house computer searching only, a combination of manual and online searching, and a combination of manual and in-house computer searching.

Costs may involve the degree of difficulty of searches and amounts of labor (and equipment) time spent searching, based on a composite of a large number of studies. It has been demonstrated that the number of searches performed in a library dictates to a large degree the kind of search or combination of searches that should be adopted on the basis of economic considerations alone. For example, for a particular A&I service, it was found that changing the price from \$980 to \$1400 would affect the kind of searches performed:

At a Price of \$980

Number of Searches	It Is Most Economic To:
Up to 60	Use a broker
61 to 100	Use manual searches only
101 to 6595	Use manual and online searches
Over 6595	Use manual and in-house computer searches

At a Price of \$1400

Number of Searches	It Is Most Economic To:
Up to 70	Use a broker
71 to 175	Use manual searches only
176 to 305	Use online searches only
306 to 6570	Use manual and online searches
Over 6570	Use manual and in-house computer searches

Thus, by changing the price of the bibliographic publication from \$980 to \$1400, the decision among alternative searching approaches changes somewhat. The principal difference between two prices, other than the number of searches involved, is that at a price of \$1400 online searching only would be least expensive for libraries that have from 76 to 305 searches per year; whereas, at a price of \$980 online searching only was not the most economic in any range of number of searches.

One could also alter the other prices that database producers control, and thereby affect the decision as well. For example, a higher royalty rate that would be passed on to the user in the form of database use charges would affect demand associated with online searching (with and without manual searching). This would broaden the range of manual-only searches, shortening the range of online searches and making in-house searching economic at a lower breakeven point of number of searches. If a database producer increased the price of database tapes sold to produce in-house computer searches, the line associated with in-house computer searching would increase by that amount without a change in the demand. Thus, in-house searching would be economic at a higher breakeven point of number of searches; and manual online searches would have a wider range. Obviously, any price change would have an effect on the sales of the products and services, where an increase in the sale of online searches might decrease sales of publications and vice versa. This will have a corresponding effect on income, favorably or unfavorably. The question is: "What is the proper balance of prices among the products and services that will yield the maximum net income or at least break even, if this is the organization's objective?" The example given below may shed some light on the issue.

In order to know what effect price changes will have, it is necessary to know the number of libraries that have various numbers of searches per year. A recent ERIC study [17] provides an example of the number of such libraries. About 1100 libraries do online searches of ERIC, and they average about 127 searches per library, to yield a total of about 140,000 searches per year. The distribution of the number of libraries having various numbers of searches appears below. For example, 25% of the libraries have at least 35 searches per year, 50% have at least 96 searches per year, and 90% at least 640 searches per year. The largest number observed was 5600 searches in a year. Returning to the examples, the researchers found that with a price of \$1400 for the bibliographic publication, about 42% of the libraries would use a broker, 24% would use manual searches only, 12% would use online searches only, and about 21% would use manual and online searches. In the data, six libraries (0.5%) would use in-house computer and manual searching. A rough notion, then, can be gained concerning the number of libraries that would use each type of search approach with various combinations of pricing. This again assumes that

the only factor considered by librarians is their decision of cost, which of course is not the case.

Another problem is to convert the number of libraries with different search techniques into income to the database producers. Income from sales of bibliographic publications is merely the number of libraries having that publication times the price. The income of online searching is derived from royalties paid usually as a function of connect time and/or number of hits. For the sake of simplicity in our example, we will use only connect time. Thus, the income is the average number of searches times the average search time, times the number of libraries conducting online searches. When manual and online searches are involved, we must multiply by 0.75, since one-fourth of the searches are quick ones that would be manually conducted. In-house income would be the price of database tapes times the number of libraries that purchase those tapes. The total income for a particular combination of prices is as shown in Table 1. Clearly, the greatest income is achieved with \$3000 publication price, \$30 royalty per connect hour, and \$10,000 database tape price. Increasing the royalty payments seems to be more effective than increasing the published bibliography price.

Results of the analysis demonstrate that price increases in royalty payments have a greater effect on income than price increases of the published bibliographies. Increases of both have an even greater effect. For example, the largest income is achieved at the highest price of the published bibliography (\$3000) and the highest royalty payment (\$30). Effect on income of increasing the price of the published bibliography by over a factor of 3 (from \$980 to \$3000) has a relatively smaller effect on the income to the database producer at \$15 royalty payment (\$140 thousand increase) than at \$30 royalty payment (\$540 thousand increase). By doubling the royalty payment from \$15 per connect hour to \$30 per connect hour one increases the income by \$610 thousand at the \$980 price of the published bibliography and \$1 million at the \$3000 price of the published bibliography.

TABLE 1. Income computed for various prices (published bibliography—\$1000, \$1400, \$3000; royalty payment per connect hour—\$15 and \$30; database tapes—\$10,000): 1981.^a

Price for Published Bibliography	Price for Royalty/Connect Hour	Price for Database Tapes	Total Income
\$ 980	\$15	\$10,000	\$1.37 million
1400	15	10,000	1.58 million
3000	15	10,000	1.51 million
980	30	10,000	1.98 million
1400	30	10,000	1.99 million
3000	30	10,000	2.52 million

^aSource: King Research, Inc.

Conclusions

Participants in the information transfer system such as database producers, vendors, librarians, and brokers are beginning to employ the marketing tools used successfully by consumer companies. However, information and the products and services employed to transfer it are different from most consumer products and services. An attempt was made in this article to show the similarities and differences as compared with the traditional marketing environment. With an understanding of these distinctions there is every reason to believe that marketing tools can and will be an essential part of the information transfer process. However, since information transfer resides in a dynamic era, with evolution of new technologies and constant changing relationships among the participants, the marketing structure must be reconsidered and varied accordingly.

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