

seventh of that for Munich (in Lisbon 863 gal of gasoline can be purchased for each GNP per capita:  $\$1,856 \div \$2.15/\text{gal}$ ; the comparable figure for Munich is 5,527 gal:  $\$9,727 \div \$1.76/\text{gal}$ ). This factor together with the equivalency in transit fares in the two cities tends to explain the higher transit use in Lisbon. (Lisbon: GNP per capita  $\div$  transit fare =  $\$1,856 \div \$0.09 = 20,622$  transit trips; Munich: GNP per capita  $\div$  transit fare =  $\$9,727 \div \$0.53 = 18,353$  transit trips.)

This conclusion tends to contradict the findings of the regression analysis with regard to the independence of transit use and levels of car ownership in European cities. In the case of Lisbon, however, (where effective automobile travel costs are much higher than other European cities included in the regression analysis) the prevailing cost of automobile travel acts as a policy constraint to automobile use and induces correspondingly higher use of transit. An illustration of how transit ridership has responded to gasoline purchasing power in Lisbon is shown in Figure 1.

#### CONCLUSIONS

In the last two decades transit ridership has experienced changes caused by the economic, social, political, and cultural evolution that has taken place world wide during this period. These changes have been substantially different in the United States and Europe.

The regression analysis showed that for both U.S. and European cities transit supply is the variable that correlates most closely with transit ridership ( $R^2$  of 0.69 and 0.81, respectively). In addition, and most important, for the same level of transit supply, transit ridership in European cities is expected to be twice as large as in U.S. cities.

The regression analysis also showed that car ownership has no significant influence on transit ridership in Europe but that it is a valid explanatory variable in the United States. On the other hand,

urban density was shown to have more influence on transit ridership in Europe. Other factors--economic, social, and cultural--play an important role in explaining these differences. This role was analyzed by comparing transit ridership levels in three cities of similar size. The results of this comparison were consistent with the results of the regression analysis.

The relative influences of socioeconomic and environmental factors on transit ridership should, however, be investigated further. A conceptual model is presented in Figure 2. The key problem in the actual development of this model is, of course, calibration of the variables and determination of the respective scales for universal application.

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## Public Transit's Survival and Prosperity in the 1980s: Effective Marketing Management Can Lead the Way

MICHAEL R. COUTURE

Fiscal pressures caused by rising operating costs, limited farebox revenues, and reductions in government operating subsidies are forcing public transit agencies to seek changes in the way they do business. Survival and future growth will depend on selection of a management approach that will help public transit adapt to changes in environmental conditions. Effective marketing management has proven in the business world to be a trademark of many longstanding successful companies. A study of how the tools and practices of modern marketing management can be harnessed by the public transit industry to help weather the current fiscal crisis and prosper in the late 1980s and beyond is presented. First, the need for a change in transit management philosophy--from the traditional operations view to that of marketing--is established. Then, a structured analysis of the marketing management process interwoven with public transit applications is described.

Presented in this paper is an analysis of how modern marketing management, a strategic approach to management used by many successful corporations, can be

applied realistically in the U.S. urban public transit industry. The literature of the 1970s and early 1980s is reviewed to (a) identify major gaps between what is being done and what ought to be done in managing public transit agencies and (b) highlight some potential opportunities for transit in the remainder of the 1980s and beyond. The intended audience for this paper is transportation and business professionals with some background in marketing management principles who have a desire to further the interests of public transit.

The approach taken in this paper on the subject of transit marketing differs from most. It emphasizes the view of the business community and uses language common to businessmen and marketing professionals. This is in contrast to an approach where traditional transit management methods and terminol-

ogy are used to describe marketing management processes adapted to public transit. The approach used reflects the current trend toward more businesslike operation of public transit and an increase in the number of business professionals entering the transit industry.

The paper begins with a description of recent trends and problems facing public transit operators, focusing on the need for a greater orientation toward marketing management. The analysis section defines and discusses marketing management in the context of a public transit operation. The analysis framework is somewhat similar to that used by Kotler in his widely studied marketing management textbook (1). Following the analysis conclusions and recommendations are presented.

#### THE STATE OF PUBLIC TRANSIT IN THE UNITED STATES

The following is an excerpt from a recent U.S. Department of Transportation study (2):

The decade of the 70's was, for the transit industry, a period of expansion. As the demand for transit rose, in part due to the rising costs and intermittent shortages of gasoline, coverage was extended to more outlying areas of urban regions and service hours were increased. Ridership and revenues increased, but not as fast as operating costs. Deficits were covered by both the Federal government, who initiated the Section 5 operating assistance program, and by local and state sources, who appeared willing to increase their support to transit. In general, there was not a strong incentive for most operators to vigorously seek ways to improve productivity and keep costs to a minimum.

Now, a new conservatism, spearheaded by the new administration, has led to changes in transit operating philosophies and the need to review and revamp the service provided. Financially hard-pressed local areas can no longer support rapidly rising operating costs and must accept cutbacks in service and fare increases. The phaseout in Federal operating assistance over the next few years will also hurt, particularly small and medium size properties. . . .

Transit operators have never had the appropriate tools to be able to plan and operate service at a high level of efficiency. Further, they have rarely had even the information required to make good decisions consistently. In the present planning and operating environment, the ability to forecast the results of possible service and operations changes may be essential to the survivability of many operators in the coming lean years. As an example, most operators cannot estimate the net revenue impact of an operating change, or even in some cases whether the impact might be positive or negative.

The preceding excerpt highlights two major issues: (a) transit agencies must learn to operate more like businesses with less reliance on public subsidies; and (b) agencies are, by and large, ill equipped to adapt to the changing environment. Many transit agencies are responding to this situation by seeking ways to maintain or reduce their expenses by improving operations efficiency or by eliminating unproductive services. Passenger ridership is viewed by these agencies as being affected, probably negatively, by these cost-cutting measures; but it is hoped that the result will be increased net revenues. This traditional focus on the operations or supply side of the problem, even though it may reduce operating budgets in the short term, may prove

to be the demise of many public transit systems over the longer term as riders leave or are forced off the system.

The lack of a consumer, or marketing, orientation is the heart of the problem. The basic premise of modern marketing management theory is that successful firms strive to maximize satisfaction of consumer needs in a way that is consistent with the objectives of the organization. Whereas the priorities of many transit agencies lie with supply (operations and cost) management, marketing management centers on demand (ridership and revenue) management. A key value of marketing management is that it provides a strategic framework for cost-effectively adapting products and services to changing consumer needs and environmental conditions.

A change in emphasis from an operations to a marketing management orientation was begun by the transit industry in the 1970s. This change was initiated principally by support from the federal government. The Urban Mass Transportation Administration (UMTA) has sponsored several demonstrations, including major projects in Nashville, Tennessee, and Baltimore, Maryland, (3), of strategic marketing techniques as a way to meet public transit needs more effectively. This movement has, however, progressed slowly.

A recent survey (4) of small- to medium-size transit operators (75 to 473 buses) indicated that generally only 2 to 4 percent of sales (farebox revenues) was spent on marketing activities. This compares with 10 to 20 percent of sales for manufacturing firms. This lack of emphasis on marketing will have to change if transit agencies hope to prevent a severe downward spiral of service cuts and reduced patronage. The time is ripe for the transit industry to renew its efforts to adopt the tools and practices of modern marketing management.

Significant barriers that remain to wide adoption of the marketing approach to management by the transit industry include (a) lack of concrete evidence (in monetary terms) of the benefits of instituting such an approach, (b) misconceptions about what marketing management is, and (c) the belief that management tools developed for private industry cannot be used by public sector agencies. The analysis that follows sheds light on the latter two problems and leaves the first, and most elusive, problem to future study.

#### ANALYSIS OF MARKETING MANAGEMENT FOR PUBLIC TRANSIT

##### Transit Marketing Management Defined

Marketing management is a concept unfamiliar to many. The term marketing is often confused with advertising and selling instead of its broader purview. The modern concept of marketing entails activities directed at satisfying human needs and wants through an exchange process. For public transit agencies, this concept would correspond roughly to "the satisfaction of public needs for mobility through an exchange of fares and subsidies for transit services." This definition, although useful for academic purposes, is much too broad to be operational. This gives rise to the concept of marketing management.

Marketing management is marketing conducted within the framework of an organization that considers specific goals and objectives and the means for obtaining desired responses from outside parties to achieve those objectives. In the context of a public transit organization, marketing management consists of all activities related to creating, building, and maintaining mutually beneficial exchanges and relationships within target markets

(i.e., groups of travelers within a transit agency's designated service area) to achieve national and local transportation, socioeconomic, and environmental goals as well as specific transit agency organizational objectives. The activities of transit marketing management include analysis of traveler needs, perceptions, and preferences and the planning, implementation, and control of programs (i.e., services, fares, and promotions) tailored to the needs of specific target markets.

**Marketing Management Tasks**

In simple terms marketing management is demand management. There are many possible states or conditions of consumer demand for a product or service such as public transit. These states change dynamically within a given transit system. Transit marketing managers must define for each demand state a strategy that will maximize achievement of agency objectives. In particular, Kotler (1) has defined eight demand states and corresponding marketing management tasks or strategies. Five of these demand states and tasks seem particularly germane to public transit as described in the following paragraphs.

**Negative demand and conversational marketing.**--In many cities a large portion of the population has a poor image of transit as a means of transportation; efforts are needed to reverse these negative attitudes.

**Faltering demand and remarketing.**--Ridership gains achieved in the late 1970s by many transit agencies are beginning to slip away due to both lowered gasoline prices (cheaper automobile travel) and to general service degradation. Actions can be taken to revitalize demand through promotional efforts and careful redesign of services to more closely match the needs of particular markets.

**Irregular demand and synchro-marketing.**--Matching services to the double-peaking pattern that characterizes demand for daily transit is costly. Because of the projected fiscal squeeze, an increasing effort should be made to synchronize demand with the supply of service.

**Latent demand and developmental marketing.**--There are substantial numbers of commuters (e.g., inter-suburban trip makers and affluent commuters) who would use transit if services were available to meet their needs. Actions can be taken to develop services where these market opportunities appear to be profitable.

**No demand and stimulative marketing.**--There may be a sizable market that is either unaware of available transit services that could meet their needs or does not consider transit as a viable mode for certain trip purposes. Attempts can be made to create demand in these markets through communications and service changes.

The process for ascertaining current and future demand conditions and for formulating and implementing appropriate strategies in response to those conditions is described in the next section.

**The Strategic Transit Marketing Management Process**

As discussed previously, marketing management is a strategic approach to operating a business. The process for executing this approach consists of two integrated parts: strategic management and strategic marketing. Each of these parts is described in the following paragraphs.

**Strategic Management**

If public transit is to survive and grow, long-term strategies must be developed for adapting to and

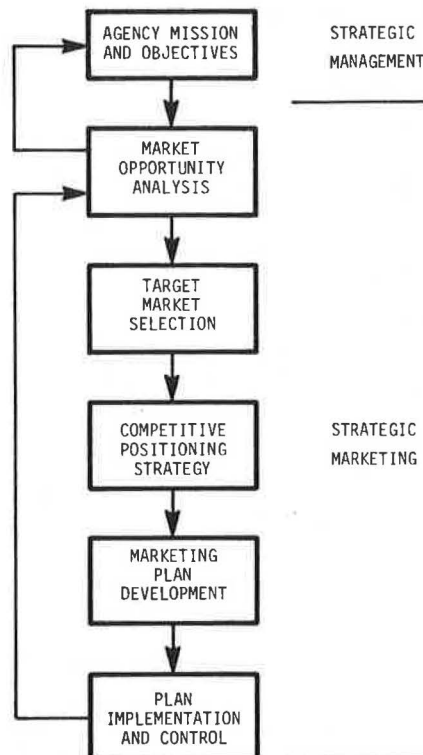
taking advantage of environmental conditions (e.g., public subsidy reductions, changes in local travel patterns, and gasoline price fluctuations). These long-term strategies are the product of the strategic management process that establishes the mission, objectives and goals, growth strategies, and business portfolio plans for the agency. The process provides the framework for carrying out the various functions of an agency including marketing. Figure 1 shows how strategic marketing (discussed later) links with strategic management to form the marketing management process.

The components of the strategic management process are described in the following paragraphs.

**Agency mission.**--Many transit operators do not have a stated mission. Instead, an externally established set of goals and objectives is relied on that does not present a clear picture of the agency's opportunities and competition. For example, if a transit system sees itself (myopically) as a public transit provider or, even more narrowly, as a low-priced, fixed-route transit operation it will probably act as a monopoly whose major market is low-income passengers who are dependent on public transportation. However, by broadening the definition to, say, transportation provider, the system recognizes that it faces competition from other transportation modes and also opens itself to a wider range of services and markets.

**Goals and objectives.**--As described in Smerk (5), the traditional public goals of mass transit have been to provide mobility to all citizens, improve the environment, conserve energy, and sustain and enhance economic growth and vitality. The latter three goals are based primarily on diversion of travel from private automobiles. These goals, which are established mostly by governing boards and regional planning agencies, have formed the basis for public funding of transit at the federal and local level.

Figure 1. Marketing management process.



To attain these basic goals and other locally established community goals, specific organizational objectives are defined. This is where transit managers come into the picture. Increasingly, objectives aimed at maximizing revenue (versus simply ridership), minimizing costs, or otherwise reducing the need for public funds must be, and are, receiving attention. Trade-offs between costs and effectiveness in achieving general goals are being made more explicit.

This is consistent with the practices of private, profit-oriented businesses and has two major implications: (a) the tools of modern marketing management are indeed applicable to public transit and (b) concentrated, targeted approaches to providing service are called for. The latter point refers to the need for, and effectiveness of, identifying specific markets. For example, in meeting the general goal of providing mobility, services should be aimed at specific groups versus the entire population. This need has been identified by numerous researchers [for example, Lovelock (6) and Woodruff et al. (7)] who assert that transit objectives should be defined by (or for) transit managers in terms of encouraging use by specific population segments.

**Growth strategy.**--For many transit operators, survival is the greatest concern right now. Even these operators, however, should develop growth strategies to demonstrate the viability and future directions of the system.

There are three major classes of growth opportunities: intensive, integrative, and diversification (1). Of these three, intensive growth, which entails the exploitation of opportunities latent in an agency's service area, is the most appropriate strategy for most public transit agencies. In light of the transit industry's historical production orientation, declining service quality, and low market share of urban transportation, there appears to be much room for growth within current services and markets. Therefore, the full complement of intensive growth strategies--market penetration (increase ridership and revenue for existing services and markets through aggressive marketing); market development (increase ridership and revenue for existing services by appealing to new market segments); and service development (increase ridership and revenue by developing new or improved services for existing markets)--can be fruitfully pursued by most transit operators.

**Portfolio plan.**--Although for smaller transit operators (less than 50 vehicles) the concept of dividing services into a portfolio of multiple strategic business units (SBUs) may seem like overkill, it has relevance to all size transit systems. SBUs can be split out according to major technological or operational differences (e.g., rail versus bus services), service definition differences (e.g., long-haul express commuter bus versus local bus service), or in some cases by individual routes. Various special services (e.g., charter bus and dial-a-ride) can also be considered as SBUs for purposes of separate marketing efforts and responsibility accounting and cost accounting. The portfolio approach can help the transit manager in assessing overall agency performance, identifying areas of strength and weakness, and guiding the allocation of future resources.

#### Strategic Marketing

Strategic marketing is a process of analyzing market opportunities and developing marketing positions, programs, and controls to serve company (or agency) missions and objectives. The process is carried out within the strategic management framework described in the previous section and diagrammed in Figure 1.

Each of the five strategic marketing steps shown in Figure 1 is discussed below as it relates to public transit.

#### Market Opportunity Analysis (MOA)

The search for and development of attractive opportunities for the agency is the first step in the strategic marketing process. The MOA activity is also the major link with the strategic management process because it provides key information for the formulation of long-term agency plans. MOA is therefore the catalyst for the entire transit marketing management process. It represents an ongoing search for ways to maximize achievement of agency goals and objectives. The tasks of MOA, as summarized by Kotler (1), include environmental analysis, market analysis, consumer behavior analysis, market segmentation analysis, and demand measurement and forecasting. The focus here will be on environmental and market segmentation analysis.

What are some of the major environmental opportunities for and threats to public transit in the 1980s? In terms of sociodemographics, a recent analysis of U.S. spatial trends by Perin (8) indicates the following:

The new wave of suburbanization expected during the rest of this century could exacerbate current and chronic operating deficits of transit systems now serving low-density dispersed markets. By 1990 suburban development accommodating new populations could double in extent, following the same multicentered pattern now characterizing most metropolitan areas. Although the automobile will continue to be the most cost-effective mode for certain types of trips, this new population could precipitate demand for services that are usually inefficient in lower density areas. . . . Despite reductions in operating assistance, energy shortages, inflation, and recession, the possibility of new users and new constituencies for public transit in low density areas may have to be acknowledged.

This trend presents the threat that existing services, which are predominantly fixed-route, downtown-centered, will be less synchronized with emerging travel patterns and behavior than they are today. However, it also offers opportunities for developing new services, such as intersuburban services that would use efficient minibus or paratransit technologies.

Because of the increasing numbers of people making work trips over the next two decades [50 percent, according to Perin (8)], chronic peak-period congestion, with all of its negative side effects including higher transit costs and lower productivity, will intensify. Efforts to develop opportunities for synchronizing demand with the supply of service (synchromarketing) should thus be a high priority for transit agencies. Analysis of population segments that may travel during off-peak periods will help to develop these opportunities. For example, the elderly population, which is increasing, accounts for a substantial portion of off-peak transit use. However, there is evidence that public transit is presently not designed to adequately meet the needs of this group, as suggested by Perin (8):

Living alone, as they are increasingly doing, the elderly appear to use tripmaking as an integral feature of their social life. . . . Clearly the reliance on friends and relatives rather than on public systems for transportation services, as revealed by this study, is of great significance

in considering future transportation systems for this population. . . . Many elderly participate in informal transportation networks that provide them with not only convenient and inexpensive mobility opportunities, but social benefits as well. Conventional public transportation competes poorly against these networks.

This indicates that attractive opportunities exist if new forms of transit service can be developed to meet the social needs of the elderly. Other studies have shown that attractive, viable opportunities exist for transit service to regional shopping centers (9) and for affluent consumers (10).

The foregoing discussion indicates that market segmentation is an integral part of the transit MOA process. This has been widely recognized by transportation researchers over the past decade, as evidenced by the substantial literature on the subject. A particularly good summary of the benefits of market segmentation is given by Engal et al. (11). Lovelock (6) presents a good example of how transit objectives can be related to segmentation variables. Basically, segmentation analysis is performed to identify groups within a community that appear likely to represent an opportunity for transit tailored to their needs. The segmentation concept assumes that (a) consumers are different, (b) differences in consumers are related to differences in market behavior, and (c) segments of consumers can be isolated within the overall market.

Woodruff et al. (7) present a summary of the literature on market segmentation for public transit and conclude that most studies to date have been ad hoc; they have not discussed segmentation within the broader context of MOA. Woodruff et al. do, however, discuss segmentation within the MOA process. The approach they suggest seems practical and systematic and ought to be considered for adoption by transit marketing managers.

The first step is an in-depth analysis of various secondary information sources describing community characteristics relevant to use of transportation (e.g., population census, route maps, and planning studies). This provides an information base for the market segmentation study.

The segmentation study identifies promising, potential market segments that can be matched with the transit mode or system type most likely to be competitive with modes currently being used (mostly the private automobile). One or more segments that appear to present an attractive opportunity can then be subjected to further analysis to provide information concerning preferences for specific attributes of a mode and service. This consumer behavior information is intended to aid in designing a proposed system or service.

The final step is an analysis of the probable response of the consumer segment to the proposed service. Concept testing, despite its limitation of discontinuous innovation, was recommended by Woodruff et al. as a more applicable approach to testing market acceptance for new transit services than product use testing or market testing.

#### *Target Marketing*

The second step in the strategic marketing process is to choose a strategy for responding to the market structure and the associated opportunities revealed in the MOA. Three broad approaches exist.

1. Undifferentiated marketing--appeal to the entire market with the same marketing mix.
2. Differentiated marketing--appeal to the en-

tire market with different marketing programs for different market segments.

3. Concentrated marketing--appeal to one or a few market segments with different marketing programs.

The first approach, which assumes that the service has universal appeal and that the market is homogeneous, has proven through the years to be inappropriate for transit. The second approach, even though it recognizes the heterogeneity of the marketplace, is costly to implement. The last approach, concentrated marketing, attempts to gain a good market position in a few well-selected segments. Because of the limited resources of most transit operators, the latter approach seems most appropriate for transit at this time.

#### *Competitive Positioning*

After a target market has been established, a general idea must be developed of the type of service to offer that market in relation to the competition. There is little question that the private automobile is transit's prime competitor, and the automobile is the kingpin. Successful positioning requires a thorough knowledge of the perceptions, attitudes, and behavior of the target market with respect to both the automobile and transit.

For many people price and quality are two salient attributes that differentiate transit from the automobile. The relative values of these attributes differ for different market segments. For example, individuals in affluent segments will usually view quality of service as much more important than the price differential. For these markets, higher priced (i.e., fare), higher quality services can be designed to compete with the automobile. Based on various research studies, however, it appears that transit cannot yet compete with the quality of service provided by the automobile. Thus, until high quality services (both actual and perceived) can be developed by a transit agency, its positioning strategy should probably focus on the price differential as the major competitive advantage. The eventual rise in gasoline prices, currently (in early 1983) at depressed levels, will serve to strengthen this relative price advantage.

Strategies that complement the use of the automobile, such as offering park-and-ride facilities and express services, also hold promise because they provide superior transportation service over the entire trip of a commuter who does not want to be completely forced out of his or her car.

#### *Marketing Plan Development*

A marketing plan is developed as the fourth step in the strategic marketing process. The major thrust of this plan is to define a marketing strategy that establishes the objectives and policies of the marketing effort. Clear objectives for the marketing strategy must be established so that the success of the effort can be measured. A marketing effort is defined by the mix of marketing variables and associated resource allocations and levels of effort. The remainder of this section focuses on the elements of the marketing mix.

The marketing mix consists of four elements--product, price, place, and promotion. These are often referred to as the four Ps. Three of these marketing mix elements--product, price, and promotion--are sufficient for defining a transit service. The fourth P, place (i.e., product distribution), is subsumed by the product (i.e., transit service). Together these three elements form the

package that consumers in the various market segments buy or reject.

The product, or service, can be defined in terms of type (e.g., regular fixed-route or special and charter services), quality (e.g., reliability, comfort, safety, available seating, driver courtesy, travel time), and access (i.e., stop spacing and walking distances). These service attributes can be manipulated by routing and scheduling, vehicle and bus stop design, and construction of facilities (e.g., park-and-ride lots).

Pricing (fares) is an important part of the marketing mix, as discussed in the competitive positioning section of this paper. Correct pricing of service is crucial because fare revenues are increasingly becoming the life blood of transit.

Smerk (5) provides a good summary of transit pricing considerations. He points out that the fare must be consistent with the service offered. Whether the fare is judged high or low usually depends more on the quality of service than on the consumer's ability to pay (e.g., low-cost, high-value versus high-cost, low-value package). Past research has shown that people are willing to pay for good service. Thus, a program of differential fares for special services tailored to the needs of different segments could simultaneously maximize revenues and service to the public.

Another important use of differential fares is the encouragement of off-peak transit use. Peak-pricing is an area of synchro-marketing that has received focused attention over the past few years and is now being tried by several transit agencies.

Promotion of the transit system is the third element of the mix. The four basic tools of promotion--advertising, personal selling, sales promotion, and publicity--are all applicable to the marketing of transit services.

Advertising can be used to expose the public to particular transit services and to maintain public awareness, to attract riders by stimulating a desire to satisfy local transportation needs through transit service, and to develop and project a favorable image of the transit agency to the public.

Personal selling occurs as part of the public information and community relations functions of a transit agency. Meetings with outside groups (e.g., Jaycees and Golden Age Club) can be used as opportunities for personal selling of transit. Likewise, providing transit information or fielding complaints via a telephone information service can be used as opportunities for personal selling.

Sales promotion activities could include discount fares for new services, free service in conjunction with the opening of a major convention, or discount coupons for transit service to a rock concert.

Publicity is an important means of promotion because (a) it is free, (b) it often requires little effort because the media are usually agreeable to promoting stories of public service, and (c) it has the potential for reaching a wide audience.

In assembling the marketing mix for a particular service and target market, an attempt should be made to systematically match the attributes of the mix with those attributes that would appeal to the target market. This is similar to the process used in defining and analyzing marketing opportunities. The major steps in this process include (a) defining the attributes of feasible service alternatives, (b) defining the attribute preferences and preference levels of the target market, (c) matching the service to the target market, (d) evaluating the cost feasibility of matched services, and (e) selecting the most feasible service mix. Excellent examples of how steps a and b can be carried out by a transit

agency are provided by Woodruff et al. (7) and Wegmann et al. (12). Figure 2 illustrates step c.

#### *Plan Implementation and Control*

After the marketing plan has been developed, the remaining tasks are to carry it out and monitor performance. The actual response of consumer attitudes, revenues, expenses, and ridership levels to the transit marketing program should be measured and compared with the objectives of the plan. This last step in the strategic marketing process essentially closes the loop by feeding information back to the initial marketing opportunity analysis step (Figure 1).

Administration of the marketing program requires assignment of task responsibilities and deadlines to organizational units. It also requires effective and continuous communication up, down, and across the organization. The following two sections delve into these two areas: the transit marketing organization and the marketing information system. These two ingredients provide the means for effectively implementing the marketing management process.

#### The Transit Marketing Organization

As indicated by current industry practice, transit is still organized as a production-oriented enterprise. Most transit agencies consider marketing as merely advertising and community relations. However, there are a few transit agencies that have reorganized into a more comprehensive marketing structure.

An analysis of alternative marketing organizations for transit is described in Organizing the Marketing Function (13). The analysis compared four basic organization structures: product (service), market-territory, market-customer, and functional. The study concluded that the functional organization was the most appropriate structure because transit services are relatively homogeneous, the market is highly localized, and transit marketing resources are limited.

An example functional transit organization structure is shown in Figure 3. A more detailed, exemplary transit organization model can be found in Organizing the Marketing Function (13). As depicted in Figure 3, the marketing function must be considered at least equal in status to the other major organizational functions for the marketing, or consumer-oriented, philosophy to permeate the organization. The organization structure shown in Figure 3 covers the major aspects of marketing management, including marketing research, which is discussed in the next section.

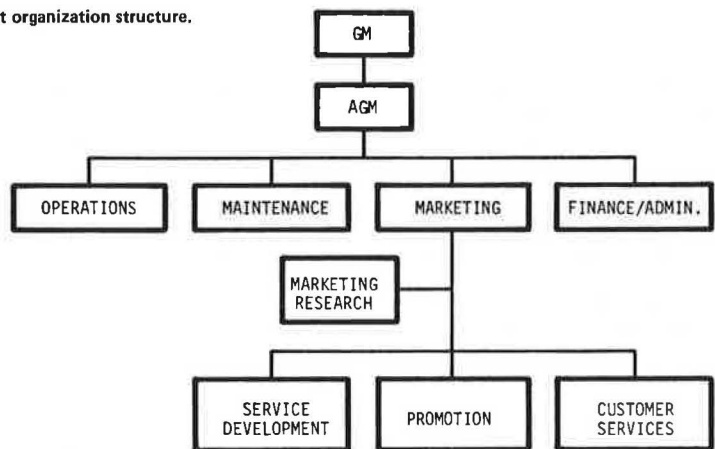
#### The Marketing Information System

As indicated in the problem statement, transit operators have generally lacked the concrete information needed to make intelligent management decisions, particularly decisions pertaining to planning future transit services. To support the transit marketing organization in carrying out its strategic marketing tasks, a marketing information system must be established. A marketing information system consists of at least three basic components: internal accounting, marketing intelligence, and marketing research. These three components provide information for the following uses: monitoring trends (i.e., service usage, revenues, costs) and evaluating actual performance against planned performance; identifying and analyzing transit marketing opportunities, competitive positions, and marketing mixes;

Figure 2. Matching transit marketing mixes to market segments.

MARKETING MIX VARIABLES	MARKET SEGMENTS		
	SEGMENT 1	SEGMENT 2	SEGMENT 3
SERVICE ROUTES	FIXED	FIXED	VARIABLE
PRICING FARES	FULL	DISCOUNT	PROMOTIONAL
PROMOTION FOCUS	SERVICE QUALITY	LOW PRICE	FLEXIBILITY

Figure 3. Functional transit organization structure.



and forecasting performance under various assumed conditions.

Internal accounting and intelligence systems that provide ongoing evaluative and formulative information do exist, albeit often at a fairly aggregate level, in most transit agencies. All transit operators have a ridership (disaggregated by population segments) and financial accounting system in place because it is a requirement for receiving federal funding assistance. Some internal accounting information can be derived from this system. A description of the types of information and data sources for ongoing transit service monitoring and evaluation can be found in Sinha (14), Wegmann (15), and Attanucci (16).

Abundant sources of information are available for marketing intelligence. The American Public Transit Association (APTA) holds frequent conferences and publishes a weekly journal, *Passenger Transport*, that provides relevant information on happenings at various transit agencies, legislation, and technological innovations. Regional planning agencies are another useful source of local environmental information. Telephone operators providing customer assistance and transit vehicle operators are other important sources of ongoing intelligence.

*Transit Marketing Research*

The biggest information deficiency in transit today is market analysis and performance forecasting information. This kind of information is obtained primarily from marketing research activities. Marketing research is an off-line information support

function as shown in Figure 4. It provides answers to specific management questions on an as-needed basis. The needs for marketing research are apparent throughout the strategic marketing process described earlier in this paper (i.e., analysis of market characteristics, segments, and potentials; consumer perceptions, attitudes, and preferences; and forecasted responses to service, price, and promotion mix).

Marketing research tends to be a technically complex activity. The basic marketing research methodology is shown in Figure 5. Further discussion of this methodology can be found elsewhere, such as Cox (17).

Several specialized marketing research tools that are used in the methodology shown in Figure 5 have been developed to assist businesses in assessing marketing strategies and plans. For example, PIMS (18), a tool used by many large corporations, can

Figure 4. Marketing research and the marketing information system.

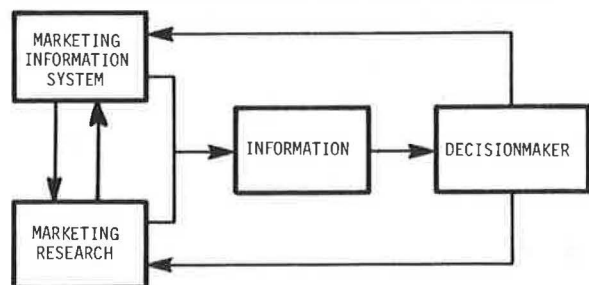
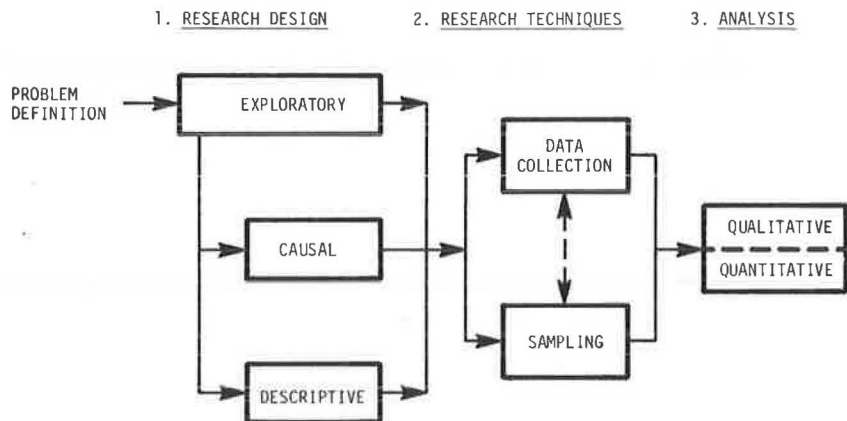


Figure 5. Marketing research methodology.



provide, via a set of statistical models, information on expected profit performance for various marketing strategies and sets of environmental conditions. Likewise, in the transit arena, techniques have been developed for analyzing consumer behavior and for estimating ridership responses to service and pricing programs. Notable among these efforts are the emerging tools that are being implemented on microcomputers, which makes them both more affordable and less intimidating to their users. Two such tools, developed at Cornell (19) and Dartmouth (20), can provide, via a dialog with a desktop computer, guidance on service design and pricing policies for either a single transit route, a group of routes, or an entire transit system. But tools such as these are seldom found in use in the transit industry.

Suffice it to say that other than at the largest transit agencies, the expertise and funds to do proper marketing research are not currently available. Because of the value of this activity to effective marketing management, filling this gap in the transit industry will be one of the major challenges in the coming years.

#### CONCLUSIONS

The discussion in this paper has shown how modern marketing management can be applied in the public transit industry. In addition major areas of deficiency and opportunity for public transit have been identified.

The question now is: Where does public transit go from here? First, the orientation of transit organizations must change to that of marketing versus operations. This means fundamental changes in organizational structures and systems, which is not a simple task. Strong support for this change must come from the top of the organization, starting with the Board of Directors and General Manager, if it is to succeed. In addition, the costs and benefits of this changeover must be made explicit if it is to be accepted by both the citizens and transit agency personnel. The federal government can provide help here by documenting case studies of successful marketing programs, such as the ones reported by Savage in Toronto, Ontario (21), and by Young in Davenport, Iowa (22).

Implementation strategies must be carefully designed and executed if a marketing culture is to take firm hold within a transit agency. Organizational behavior concepts relating to change should be considered. Implementation of a management information system (MIS) with a strong marketing emphasis can aid and direct the change process. The

role of an MIS in bringing about organizational change is discussed in depth by Keen (23). The availability of low-cost microcomputer technology makes automated MISs now cost feasible for any size transit agency.

Finally, the tools of marketing research will have to be adopted by transit operators. As the changeover to a marketing orientation evolves, it is hoped that the benefits will become obvious and expenditures on marketing research activities and staff will increase.

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# Low Cost Planning Techniques for Assessing Rural Transportation Needs

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As many local planning departments face lower departmental budgets, hiring freezes, and consolidation of various planning functions, the creative application of traditional planning techniques specifically to small-scale rural transportation projects becomes increasingly important. It is necessary in continuing to provide the informational support needed to compete for reduced program funds against an increasing pool of fundable projects and to distribute those funds fairly throughout a large and often diverse rural population. The purpose of this study was to find low-cost ways to apply those traditional planning techniques to the specific needs of a rural community. The low-cost application presented uses secondary data that are available from published sources to rank communities in a political jurisdiction according to their transportation needs. Ranking such areas according to the proportion of the population that is transit dependent is a first step in the political decision-making process to be followed by an actual estimate of transit ridership using demand models specifically calibrated for rural areas. The technique was used in preparing the transit element of the County of Rock, Wisconsin, Transportation Study.

## THE NEED FOR MODIFIED PLANNING TECHNIQUES

There are a number of conditions common to rural areas that require the adaptation of traditional planning techniques. The planning technique discussed in this paper is needs assessment. The purpose of needs assessment in this context is to establish priorities for transportation needs within a political jurisdiction. Commonly, this technique involves collection of original data on current patterns of transit use and/or citizens' predictions of their future use of a proposed service as defined broadly at the preplanning stage. This collection and analysis of original data requires a large amount of time and a large number of staff hours as well as specialized skills in survey and statistical

research. Even so the technique often yields predictions of high use areas with low correlation to actual use.

Planning for the transportation needs of rural areas requires modification of the traditional technique for establishing priorities in geographical subareas to accommodate conditions common to such areas. Those conditions include population size and characteristics, geographical size and diversity, land use patterns, local administrative and legislative structure, and the area's status within a larger political jurisdiction.

## Size and Land Use

Size and land use are major factors in determining the planning and program resources available to the area. The small population and predominantly agricultural land use of rural communities provide a small tax base (both property and income). Local revenues, therefore, often can support only a small planning staff. Recent economic conditions have further restricted that staff.

For instance, local tax relief initiatives and federal income tax and spending reductions have reduced local revenues. Reduced revenues have been compensated for by reducing overtime, increasing the use of part-time employees, reducing positions through attrition and layoffs, and eliminating certain planning and program functions.

In addition, the Comprehensive Employment Training Act (CETA) and other sources of federal support have been curtailed. Thus, staff, members are often