

RESEARCH IN THE TRANSIT FIELD

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The history of research in the transit industry is one of fragmentation of purpose and not one of long-range planning or development. Although individual transit operators are partially responsible for the situation, it has resulted primarily from lack of financial resources. Until recently, most transit properties were privately owned and were not oriented toward research in the traditional sense. Some planning and experimentation did occur; however, for the transit field as a whole, research has been meager until recently. When operations began to become unprofitable, transit operators did not attempt to redirect their operations and apply new techniques and new concepts in the field to capture their share of the demand for travel. They generally performed various cost-cutting measures that in turn resulted in a lesser demand for transit services.

Many individuals who have operated transit properties have not been professionally oriented toward research, and in many instances they have viewed research and planning as a waste of money. Only within the past few years has there been a relatively large allocation of resources for transit research. These resources have come primarily from the federal government, with some participation by local and state agencies. There has been more money generated for research and planning purposes in the transit field within the past few years than has been available in all of the preceding years.

It is interesting to note that the control of these research moneys does not lie in the hands of the transit operators. There are arguments for and against this method of research control. Many would argue that past experience of transit operators dictates that research money should not lie within their control but should be controlled by those outside the transit properties. The federal government has established a relatively large research program under the Urban Mass Transportation Administration and allocated a portion of the federal budget for planning and research in the public transportation field.

Most of the individuals who are connected with the federal research program are not traditional transit people. In most instances they have not actually had any operating experience with transit properties. This is viewed by many people as an excellent characteristic, whereas many transit operators view this as a mistake. Because of their differences with regard to research orientation and communication, there is a strong need to bring together researchers and transit operators.

In working with transit operators, one finds that many of them are only concerned with short-range improvements. There is some justification for this, or at least one can understand why they take this position. Most operators are concerned with operations on a day-to-day basis. They have a difficult task in keeping the equipment operating each day. It is difficult for them to plan for long-range programs because they must concern themselves so fully with daily operations.

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Also one finds that the transit operators are generally concerned with gross improvements in their systems' operations. Their problems have been so enormous that it has become difficult for them to be concerned with the optimization of a specific segment of the total operations.

Generally transit operators have desired only a minor amount of experimentation. They have not normally been willing to permit radical changes in operations unless it could be proved that such changes would result in profitable benefits to their operations. This attitude has been largely due to the type of research staff maintained by transit operators. In general, these staffs lack the proper motivation and capability in the research area. Further, relative to the total amount of labor required for a transit organization, the staff that is available for research is extremely small. In many transit properties across the United States, there is not a single individual who has the background, training, expertise, or inclination to do research and planning. The budget for transit research and planning reflects the attitude of the operators in this area.

There is a different outlook on the part of those outside the transit industry who are performing research in the transit area. Most of these research programs are concerned with both short- and long-range improvements.

Many of the transit researchers are new to the transit field and really have not had operating experience. They are often concerned with particular subsets of the total system. Frequently, the requirements to perfect an optimization require a tremendous amount of training on the part of the employee of the transit operators. These researchers are, however, interested in all phases of research in the transit field including hardware, regulations, labor, and management. A large portion of the funds being utilized for research in the transit area, however, is directed toward hardware technology.

AREAS FOR RESEARCH

Because the current interest seems to be in technology, it is appropriate here to review those activities that significantly affect capabilities in the public transportation field. It is very common to find public transportation systems that are 85 percent labor intensive. This means that only 15 percent of the budget allocated is concerned with capital improvements. Vast amounts of money are being put into personal rapid transit (PRT) systems and other hardware development. The basic question is whether new technology will attract a large demand for public transportation. If the demand does not come, capital programs of improvement will have been a failure.

Labor often becomes the controlling factor in public transportation operations. Exorbitant wages, far beyond what the same skill demands on the open market, are being paid to transit drivers. Public transportation systems are being dominated by labor contracts that do not encourage demand for public transportation but promote the economic welfare of the individual employee. This is not to say that labor is wrong and management is right, but it is to say that, at this point in time, there is not a proper balance between labor and management in the public transportation field.

Another serious problem that hinders the development of the full potential of public transportation is that of regulations. Our regulatory schemes do not enhance public transportation in urban areas, but actually limit its full utilization. Most public service commissions were established to protect the general public but now in many instances operate to its disadvantage. There are many regulations in existence, such as the prohibition in some areas of moving freight and passengers together, that deny operators the opportunity to optimize the use of equipment and labor. Some states prohibit taxi systems from operating a shared-ride or dial-a-bus system.

Other regulations concerning fares, areas served, and changes in the system (which are subject to prior approval and are time-consuming) do not necessarily enhance public transportation. Many of these regulations tend to limit the ability of the public transportation operator to provide good and equitable service to the community and at the same time make a profit.

Most transit systems are not as flexible as they could and should be. This, in part, contributes to the low demand that exists for public transportation. In large urban

areas, if 20 to 25 percent of the travel demand uses public transportation, the system is considered successful. In small urban communities, the demand may drop to 2 percent or even lower. The traditionally restrictive public transportation system is not really competitive with the automobile, and outlays for capital intensive programs do not necessarily make the system more flexible. One can logically argue that an individual will not walk $\frac{1}{2}$ mile to ride a PRT system any more than he would walk $\frac{1}{2}$ mile to ride a bus system or rail-rapid transit system. As the flexibility of a system goes down, its ability to attract patronage also decreases. The inflexibility of many systems is due in part to labor and its control, to management and its inability to implement new innovations, and to the regulatory bodies that control these systems. It is often argued that the quality of transit property management is just a little bit above that of the railroads. In many operations this is difficult to dispute.

Another problem in this area is that which occurs when transit properties become publicly owned. Without exception, as the public takes over ownership of a mass transportation system, the percentage of the system that is labor intensive increases. No one seems to be able to control the allocation of funds for labor once a system becomes publicly owned. There seems to be an unlimited amount of funds available from the public sector to support the demands of labor. It would seem then that public transportation should remain in the private sector; however, this is difficult to achieve.

The basic question in reviewing the research needs in the transit field is where will our research lead us. It is not readily apparent that research in the technological field will lead us in the direction of increased public transportation use. It would seem that research of the constraints placed on transit by labor organizations, regulatory bodies, and public bodies would lead to more fruitful results. If technology enabled one to operate without any capital expenditures, one would only reduce the cost of operating by about 15 percent. The argument, of course, is that new technology will decrease the labor intensiveness of public transportation systems. It would seem that a change in job description is more likely to occur with an equal amount of labor still required.

It is difficult to envision a PRT system costing from 10 to 15 million dollars per mile that will have the flexibility to compete with the automobile. PRT systems have their use, but they are not a solution to all the problems in the public transportation field. More research, it would seem, needs to be done on labor and its control of public transportation, on management and its capabilities, and on some very restrictive regulations.

One should always keep pace with technology and see that proper technological innovations are incorporated into any existing system. Yet the payoff in the long run is not found in equipment but in other areas. Those within the transit field differ quite substantially from those outside it with regard to the direction that research should take. If research performed outside the transit field indicates that certain improvements should be made, but the research is not sanctioned by the operator himself, how likely is it that the research findings will be implemented? On the other hand, if the research that the operator requests will not lead to lasting improvements in the field of public transportation, why undertake it?

CONCLUSION

There are great differences in the thinking of researchers and transit operators, differences that must be resolved if one is to solve the many current transportation problems. The expenses for operating public transportation do not prohibit a system from being economically viable. The lack of demand for service is the crippling factor. If one desires to make public transportation economically viable, he should address himself to that which has the most influence on the economics of system operation.