

AIRPORT LANDSIDE CAPACITY: ROLE OF MANAGEMENT

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This paper isolates and examines in some detail the role airport management should play in acquiring and maintaining adequate levels of airport landside capacity. Recognizing that technical standards are both pervasive and desirable, it postulates that, although certain technical standards exist for providing landside capacity increases, they should not be used without careful management supervision and judgment and may not be used at all. The paper proceeds to examine why a balance between air-side and landside capacity is important and analyzes several specific managerial elements that should be brought to bear on each prospective capacity improvement. It shows the varying interrelations of the elements, discusses the importance of local managerial talent and judgment processes (particularly as they relate to weighting the management elements on a situational basis and the application of cost-effectiveness techniques), identifies the barriers that tend to inhibit greater managerial effectiveness, and examines the methods by which management inputs may be improved. Several areas of research are suggested.

"Push the button marked 'landside capacity,' and the answer will be apparent," says the computer company vice-president. "Not so," says the respected management consultant. That is about as clearly as I can point up the growing dilemma that surrounds the role of management in providing the right amounts of landside capacity on a timely basis and in a cost-effective manner.

The oversimplification is obvious, but it does highlight the central theme of this paper: Where standards can be applied, they should be, because they offer a chartered course to follow. But sometimes specific standards do not exist, or if they do exist they must be tempered to fit certain conditions. That is where managerial judgment must be exercised. One is as important as the other.

In the present fast-moving society, the application of standards

has become routine. Assembly lines are developed from tooling standards, moving at standard speeds, assembling standard parts, and having an acceptable standard level of rejects. Total output is measured against a present goal that, in turn, was developed from a standard. We have a government-determined standard in this country for the percentage of meat to be included in hot dogs and hamburgers. The construction industry is full of standards having to do with strengths and performance, and the airline business is not without its own bag of standards: rate of return, load factors, on-time performance, level of customer complaint, and incidents of unscheduled jet engine shut-downs in flight. Even in service industries, standards are applied for customer satisfaction and number of clients serviced in a given time period. The application of standards invades nearly all fields where numbers, specifics, and tangibles (and even some intangibles) are the items at hand.

I do not mean to imply that standards are neither desired nor helpful. On the contrary, I think it is clear that standards are not only helpful but required in certain areas if not in most areas. What architect, for instance, wishes to specify and use a steel beam if he or she is not convinced that it will meet a present strength standard and deliver a degree of preestablished performance?

On the other hand, one has to wonder about the degree to which the application of standards to all other forms of human endeavor can ultimately be applied before a point of diminishing returns is reached (a purely technical approach to the question) or before the effect becomes so dehumanizing as to lower the quality and enjoyment of life to some unacceptable level (a subjective approach). The latter, which is a social and not a technical question, can stand a certain degree of investigation and evaluation, even though this is not the place to do so.

The application of standards continues to become more widespread and to move into areas hitherto thought unavailable or unresponsive to quantitative standard setting or performance evaluation. Standards are now being applied to the area of measuring the success that management of any given endeavor has in achieving its goals. This effort has been carried on with varying degrees of intensity for a number of years. Highly paid industrial psychologists have examined in extensive detail the qualities and attributes that seem to be common to most successful business executives only to conclude, on balance, that there are simply too many variables to permit the definition of, let alone the prediction of, a typical successful business executive. They can catalog and identify certain skills and personality traits that appear to be common denominators in persons already having achieved success, but cannot seem to preselect an individual who seemingly displays these qualities, place him or her in any given management situation, and predict with a statistically valid level of accuracy whether that individual will, in fact, be a success in that particular time and situation. Further, there are also too many instances in which an individual business executive has achieved a degree of success that would not have been thought possible by either peers or industrial psychologists had he or she been removed from the situation and analyzed well in advance of the success eventually achieved.

If we have difficulty in predicting managerial success with regard to the individual, can we, through the use of standards, do any better in helping management achieve its goals and objectives?

Management today has infinitely more information than it had as few as 10 years ago. Further, this information is available in many cases on a timely basis, all of which immensely speeds up and assists in the decision-making process. Along with the massive amounts of information are the recently developed and refined management information services (MIS) through which management can define and secure the precise amount of information it needs and can use out of all the information that can be produced. Basic to the MIS concept is the use of computers, whose information storage and retrieval capabilities are nearly unlimited.

The use of computers and the technique of computer modeling and simulation are effective tools for analyzing complex situations containing many identifiable variables. Their use makes this type of analysis much faster and considerably more objective. Some of us, however, reject the notion that almost all work situations can be reduced to punch cards and fed into a properly programmed computer and that the solution will

then be obvious. Even in a rather well-known and straightforward application of computer simulation to an airport, a good deal of weighting was applied to the broad range of variables introduced into the simulation study. (I refer to the Dallas-Fort Worth effort during which the arrival and departure of aircraft and their movements on the ground were simulated by computer to identify the most likely choke points and thereby to define the optimum placement of taxiways and their intersections.) The weighting of these functions was a subjective exercise provided by management. Consequently, the role of the computer and situation simulation is reduced to one of comparing the many subjectively weighted alternatives and doing so much faster, and perhaps more accurately, than could possibly be done by humans.

At this juncture, the reader may well have surmised that, in my judgment, the answer to my earlier question is a qualified yes. The application of standards, together with prevailing computer technology, can assist but cannot replace management when decisions of a subjective nature are made. It follows that for the issue at hand—timely provision of adequate levels of landside capacity in a most cost-effective manner—the role of sound management, independent of mechanical and electrical aids, is indispensable. As a corollary, I would also advance the notion that, insofar as any given airport is concerned at any given time, there simply is no best way, standards and simulation notwithstanding.

EXTERNAL ELEMENTS REQUIRING MANAGEMENT CONSIDERATION

Need for Balance

Landside congestion is becoming serious and may become one of the first constraints on air travel growth. There is little point in pursuing the identification and solution of existing or future airside airport constraints if the satisfaction of those constraints cannot be matched by adequate levels of landside capacity. Clearly, to spend money on new runways, runway extensions, strengthening efforts, or more sophisticated navigation and guidance hardware and techniques is wasteful if there are not enough gates at the terminal building to handle the arriving airplanes, if the roadway in front of the terminal building is congested beyond solution, or if the parking lot is saturated to overflowing during nonpeak hours. The problem is essentially one of balance, for reversing the assumptions stated above is an equally valid objective for study. Because landside and airside capacity affects the ultimate life of an airport, to create the balance between them is perhaps airport management's greatest role. If management can continually strike such a balance on a timely and cost-effective basis, the performance of that management must be given high marks.

Regardless of the specific industry or endeavor in which they are involved, all managers are faced with the knowledge that construction comes in chunks and, by its nature, does not permit the gradual expansion to meet gradual and growing demands. On the contrary, management usually finds itself building somewhat larger than the current demands require so that, as time goes by, the project fits its purpose and finally becomes crowded, at which point an additional round of expansion is required. Typically, the degree to which any expansion effort is initially overbuilt relates directly to

1. Management's ability to finance construction;
2. The degree to which most of the new construction can be usefully employed without a continuing shifting around of people and the functions so allocated; and
3. Maximizing the amount of time between construction efforts so as to provide the least disruption to the overall efficiency of the organizational or operational unit.

If the availability of construction funds is not the primary constraint, management may tend to create new physical facilities in somewhat larger quantity than it might otherwise do, thus minimizing the long-range cost impact and further extending the date

when an additional round of construction will commence. It will also have a much freer hand in applying sound business judgment to the space actually required. This is a highly desirable state of affairs.

Although striking a continual balance between capacity on the airside and capacity on the landside must be paramount in management's objectives, doing so is a practical impossibility for the reasons outlined above. Management is thus reduced to the position of finding and achieving the best possible compromise in balances between airside and landside engineering. To do this, it must identify and treat several elements that will ultimately help it decide when, where, and how much of the increased landside capacity will be sought, built, and managed at any given time.

Specific Elements

Management must deal effectively with at least 6 elements if landside capacity or any other major public project is to be achieved as desired: service, community, institutions, financing, planning, and timing. These elements are all interrelated, and a consideration of one should by no means exclude simultaneous consideration of any of the others. There are, however, instances in which one or more is substantially more important, for it relates to a particular capacity increase problem in a particular location.

Service

At the outset, management must determine from the users of the facilities—the public, tenants, and employees—precisely how much capacity increase is required, the desired level of service to be provided by that increase, and the level of service in both the initial construction and the latter stages. To do this, management must examine the needs of each. What are the public's space and service needs for waiting, walking, moving, standing, observing, and reading? What is required in roadways, parking lots, and vertical and horizontal movement devices (and in this latter consideration, more and more attention must be given to the specific needs of the aged and the handicapped—a need that has been heretofore largely ignored)? What space and facilities are needed for baggage claim, baggage service, the rental and positioning of rental cars, and other forms of ground transportation? How many airlines are there? What are their requirements? How do these requirements today differ from what they will be in 5, 7, or 10 years from now? Do these needs match local management's concept of the public's needs? What are the comparable needs of the tenants and other businesses that might be established within the new facilities? In fact, what kind of businesses? What kinds of expansion and access? Are they to be established essentially as peripheral niceties, or are they essential to the principal role of the building?

The point to be made is that management must identify qualitatively, as well as quantitatively, amounts and levels of service to be provided the users of the additional landside facilities. An analysis of these needs is normally made by a combination of inputs from management, inputs from the users, and an overall objective evaluation by a qualified consultant. In making these analyses, management will apply standards to matters such as

1. Linear curb footage per enplaned and deplaned passengers,
2. Numbers of parking stalls required for local originating and departing passengers with extrapolation into peak-hour usage for entrance and exits,
3. Square footage to be assigned to hold areas based on the size of aircraft anticipated to use the adjacent ramps, and
4. Definition of peak-hour loads (current and projected) in order to calculate the widths of corridors and other waiting areas.

The thoughtful application of these standards to specific situations is most helpful in

defining space needs. If consensus can be obtained on the use of standards in a given situation, the resolution of the problem is reduced to acceptance of activity figures, and the overall problem of how much is greatly simplified.

The management role, aside from reviewing the validity of service standards and local applicability of these standards, is to balance the stated needs of all users against the manager's perception of those needs. The manager is the balancer—by definition as well as by function—among competing factions whose pecuniary interests may have a way of tipping the scales away from the common good. Although it may be natural enough and in some cases acceptable, it simply will not do for airport management to forego or downplay the importance of the service measurement role.

Community

A related but essentially separate element requiring management consideration is that of the outlook of the community (in this context, I distinguish between the community at large and that portion of the community who use the airport facilities). The degree to which the construction or expansion takes place and the size, spaciousness, architectural treatment, and overall appearance will, to one degree or another, mirror the desires of the community. This is particularly true when the ownership and management of that facility are responsible directly to elected officials. Further, the degree of community involvement and interest will hinge to a great extent on how the community at large perceives the role and performance of its airport. Is the airport a dominant regional facility? Does the business of the community require extensive use of airport facilities? Has the management of the airport been acceptable and without scandal to the community or its leaders? And perhaps most basic of all, what of its safety record?

Almost without exception, the manner in which the community looks at its airport will be determined by the air-mindedness of its elected and governing body and the efforts they have made to maintain the airport, both airside and landside, in first-rate condition. One need not look too hard to find cases where community leaders have generated a sense of public spirit and recognition of the value of the airport to the community, have actively promoted its development, and have sought out new and helpful air service to that community. On the other end of the spectrum is that community whose civic leaders see little or no value to its airport and view it at best as a necessary evil and at worst as a tax-consuming, land-consuming, noisy activity that should be curtailed and, if possible, either removed or eliminated entirely.

Assessment of the community perception of the airport activity and its environment is a key management consideration in the projection of any new or expanded airport function. In nearly all cases, the public must feel that additional capacity is needed, particularly if the costs are to be paid by the public directly through ad valorem taxes.

Assessment of the relation between the community and the airport ownership and management is a key management requirement and one that does not easily lend itself to the application of standards. If a general obligation bond issue is required and management's assessment of community support is negative, the program must be either deferred or a specific effort designed and mounted to alter the community's opinion. Even if no bonding authority from the public is required or sought, only poor management would plan and undertake major projects without assessing the public attitude and, if necessary, creating a favorable climate before continuing with a project.

Institutions

In the undertaking of almost any public endeavor, particularly one involving construction, institutional considerations must be assessed and dealt with. Often, we are not aware of these considerations largely because they control our day-to-day lives and activities so continually and unobtrusively that we have come to accept them without much question. Expansion situations will require the consideration of differing institutional

parameters, but the following are universally present:

1. The political structure and framework within the activity is to be taken and managed,
2. The organizational structure of that airport itself,
3. The legal framework, and
4. The requirements of other agencies or organizations.

Few people are naive enough to believe that political considerations in any public undertaking are unimportant. Politics exist, and getting things done in a public environment requires political attention and action. If the airport is owned by a municipality and that municipality is governed by a city council, the city council must approve and accept the basic notions behind any additional expansion or construction of any airport facilities. While the outlook of council members, to a great degree, will reflect the outlook of their constituencies, the immediate politics of the situation may be substantially different, and this in turn depends to a great extent on the financial basis and the timing of the project. No manager should undertake a major public project, whether or not it requires public funding, without a careful assessment of the political climate.

A second institutional factor is the structure of the airport organization. An assessment should be made of whether that organization has the capability to undertake the project. For instance, if the roadway network approaching the airport is to be expanded, does the organization have personnel capable of conducting the study, preparing alternatives, obtaining the required reviews, holding public hearings, preparing plans and specifications, and so on?

The legal framework within which public bodies operate clearly has a bearing on any public endeavor. Construction contracts, insurance policies, performance bonds, civil rights assurances, and other contractual requirements must be known and understood in advance if problems are to be avoided in the succeeding expansion efforts. The degree to which management pays attention to these potential trouble spots before beginning a project will bear on its success.

The last institutional factors are the rules and regulations imposed on local government by state and federal jurisdictions. This category is the most difficult for management to assess and deal with, for it is constantly changing and, unfortunately, expanding.

Financing

The most obvious element with which management must deal is financing. It is the most visible area and the one in which there are the most self-proclaimed experts. Most communities do not have sufficient surplus funds on hand to undertake any major capital improvement project on short notice, and a task of management is to determine how best to obtain those funds. This may be done in several ways.

1. A relatively small project may be financed by including it as part of the overall community's capital improvement program for the following year and levying enough ad valorem tax to cover the overall expenditure.
2. If the airport has enough cash flow to create a surplus from year to year and if the capital project is not needed immediately, the surplus for several years can be accumulated and dedicated to the project.
3. The project may be added to a number of other projects for which the city issues general obligation bonds.
4. A single specific bond may be issued to cover the project. This method has the advantages of securing a lower net interest rate (usually) and allowing the airlines or other major tenants to avoid becoming partial guarantors of the bond.
5. A revenue bond issue may be used. This requires that revenues generated at the facility are more than sufficient to provide debt service for the bond and keep the facility going as well. Although the interest costs are normally higher, a revenue bond

issue has the advantages of not being added to the community's overall indebtedness level and freeing up the community's finances for issuing general obligation bonds for other types of projects where revenues cannot be generated (sewers, streets, schools).

In any given situation where substantial capital funds are required, management must evaluate all aspects of fund raising and determine the method that appears to be the most practical and most feasible. As indicated earlier, when the capacity for generating sufficient revenues exists, the revenue bond issue seems to be the prevalent financing method in spite of its higher net interest costs. However, other important considerations in selecting the financing method are

1. Must the bond issue be auctioned off at a public bid or may it be negotiated?
2. How close is the community to its limit of bonded indebtedness?
3. What is the mood of the bond market, i.e., is there the likelihood of a successful sale by either bid or negotiation?
4. Has management obtained prior commitments by the principal users to some repayment process, either direct or indirect?

Clearly, financing is crucial as a management element and must be interrelated with prior elements of political and community support. If a bond issue is required, the community is fortunate if it does not need to go through the voter approval process, for it is often at the point of greatest need that a community finds itself least inclined to vote for the expansion or improvement of facilities that a majority of them hardly ever use.

Planning

In planning, perhaps as in no other element, the potential for major error exists. For the purpose of this paper, planning is the process by which the parameters of the capital improvement item are defined. Included are items such as forecasts of activity for given levels of services, size, form and function for solving the established space and service needs, and the coordination processes among architects, engineers, and users and other agencies whose rules, regulations, and reviews must be considered. Excluded are the functions relating to finance, politics, community support, and timing. Planning must attempt to inventory existing needs and project those needs at given levels of service into various future time frames. It must then attempt to match demand with capacity through continual scheduling.

The planning process must recognize elements that are not directly related to the project. In the planning activity, we often find the application of differing sets of standards for the same type of activity; individuals employed by different companies in the same business forecasting substantially different levels of activity; and many people who, under the guise of planning, are really substituting financial expediency and their own short-term gain for the long-term good of others. In airport facilities planning, such a process can lead to the construction of a terminal building that is grossly undersized even before construction is completed. Management is the arbitrator, the blender of all the various and differing elements and levels of service, and must carry the ultimate responsibility for both the acceptable and unacceptable consequences of future construction.

In an effort to solve the planning dilemma, many communities resort to the use of airport planning consultants. Management cannot, however, and must not accept a consultant's final report as "the answer" to whatever the problem is. It must apply its own review processes and judgment to the consultant's recommendations. The application of this judgmental process brings into sharper focus the balance between landside and airside capacities.

Timing

Timing may be the key to the ultimate success of the project. In the planning process, timing must be geared to the recognition by most that there is a need and that the planning process must precede the rest of the processes. By the same token, the timing of the issuance of the final report highlighting those needs is also important. It is not difficult to imagine what might happen to a report calling for extensive physical construction and attendant capital construction money if that report is issued at a time when the community has just been given another report calling for massive capital dollar needs for other public projects. Who wishes to seek approval for a major project during a political race when it is known that many of the candidates are opposed to the proposed project? Will we not be in a more favorable position to advance a bond project for, let us say, a terminal building expansion and more terminal building roadway capacity if the public is tired of waiting for baggage delivery because of insufficient capacity or of missing flights because of a congested roadway in front of the terminal building? Timing is thus crucial to all of the elements and must be judged by management because there are no established standards to apply.

IMPORTANCE OF COST EFFECTIVENESS

Cost effectiveness is determined by answering the question, Is the benefit to be obtained worth the cost involved? Applying a cost-effectiveness analysis requires the reduction of each element involved to some quantifiable amount and then the balancing of the pluses and minuses. In some instances, cost-effectiveness studies offer more than an answer to the basic question. For example, a study might show that one might provide 2 or 3 additional levels of structured parking and thereby provide more car parking spaces at a lower cost through the use of slightly more expensive lightweight construction materials than through the use of traditional construction techniques and materials. If there are no other constraints, the additional stories and spaces may well be built.

In this era of rapidly spiraling price increases, cost-effectiveness studies and use of construction management teams are becoming more and more prevalent. Governing bodies and the public demand the most for the least. However, despite the widespread use and merits of cost-effectiveness analysis, other factors must be considered in the solution of any public construction program, whether it be a court house, a jail, or airport terminal facilities. I will discuss 4 of these factors; public acceptance, public convenience, aesthetics, and functionalism.

Public Acceptance

Modern penal and criminal concepts often suggest that the jail be located immediately adjacent to the courts and rehabilitation centers. A community may desire to build a new complex for this type of activity, including a jail, but it is quite possible that the public simply will not accept the plan to place new jail facilities in the center of downtown or other locations where the rest of the criminal justice processes will take place and the consequent high cost of providing those facilities in that location. In short, although all other reasons and logic point toward doing so, the public simply does not want and will not accept this location for a jail regardless of whether it is the most cost-effective manner in the long run of dealing with the incarceration processes. By the same token, the public may demand the expenditure of greater funds for a river clean-up project. The city council might decide for the public health and welfare that the project is necessary and will be done on a bare-bones budget. The public, acting through its elected city council, may well decide that sheet piling and riprap are all wrong and that gently sloping, contoured, grassy banks incorporating parks and recreation centers, though substantially more expensive, is what it wants.

Public Convenience

The public convenience factor may be somewhat less mysterious in its effects but perhaps more often plays havoc with the application of cost-effectiveness principles. Installing dual-moving walkways on some long airport terminal concourses is extremely expensive and certainly not cost effective, and yet public convenience may override the added cost. Public convenience is also involved in meeting the needs of a growing aged and handicapped population by placing walkways, elevators, and ramps in locations where they have not previously been placed. Public businesses are pressured into constructing multilevel parking facilities, particularly at airports, even though property exists for additional on-grade parking slightly farther away from the terminal building. All of this is based on public convenience and certainly not on cost effectiveness. Even the well-established concept of second-level loading of aircraft is one that places the convenience of the public above cost effectiveness.

Aesthetics

In past years, public officials sometimes built public structures as monuments to themselves. Some officials still wish to have facilities constructed that not only are workable but also attest to their public dedication and leadership. Although we are moving away from this particular activity, mostly because of cost implications, there are limits to which local governments are willing to go in the interest of saving money and applying pure cost-effectiveness techniques. Some airport terminal buildings have been constructed with architectural considerations almost as important as the functionalism of the building itself. The public wants the structure to look good even if it costs a dollar or two per square foot more.

Functionalism

Functionalism means that a structure may work better if it costs more. The space may be available on a single level to accommodate both inbound and outbound passenger functions with adequate curb frontage for both. On the other hand, a 2-level facility, which may cost a good deal more, is considerably more functional and provides nearly twice the amount of curb frontage per function. This is true whenever all activities can be placed on one level but are, in fact, concentrated over 2 or more levels with attendant cost increases. Functionalism also includes the necessity for maintaining an operational status. To remodel a certain portion of a building may require the eviction of the people using that space and relocating them in temporary facilities that are torn down at the end of the remodeling period. This is hardly cost effective, but it is necessary and functional.

The argument could be made that the concept of cost effectiveness recognizes and includes the need to maintain a continuing operation and to provide temporary facilities that may have to be abandoned after their temporary use. I do not take issue with this approach, but by separating these factors I simply mean to show that in the planning, design, and construction of any substantial public facility considerations must be addressed other than cost effectiveness of the structure. In so doing, the managerial process is brought into play, and subjective values are applied in situations that may seem on the surface to lend themselves to a pure cost-effective approach.

MANAGEMENT INPUTS

Weighting the Elements

Each of the elements that require management consideration has its own relative

ranking and importance in any given situation. These may appear in one order for one project in one community and in an entirely different order for another project in another community. Local management must, therefore, bring its knowledge to bear on the analysis of the local situation.

A manager who has been in a situation for some time and has had experience with 1 or 2 major construction programs develops a "feel" for the validity of the statistics and forecasts that are developed to justify additional facilities. The well-trained and experienced manager will spot the discrepancies, recognize the shortcomings, and exercise a managerial prerogative that, in essence, overrules and extends some of the planning criteria as necessary. This illustrates that weighting the planning element must be made not only from a technical point of view but also from a management point of view. This is a management function that does not lend itself readily to the application of standards and guidelines.

Setting Prices for Landside Services

A second management input is the degree new facilities can be expected to pay for themselves. This, too, requires a rather intimate knowledge of local conditions and a general understanding of how much the public is willing to pay. For example, the rate paid by the public for parking in existing facilities may seem relatively low and, therefore, quite acceptable. Whether a proposed new multilevel parking facility represents a new bonded indebtedness or not, construction costs are substantial, and the tendency is to look for as rapid a repayment as possible through higher rates to the public. Fortunately, parking facilities do provide one of the fastest returns on investments in the public sphere, and yet public agencies are not quite at liberty to adopt the same pricing philosophy for parking services that a privately held business might adopt were that same garage under its control and jurisdiction. Based on business practice and cost analysis then, one might conclude that a new price rate that substantially differs from the old rate is required to properly amortize the investment. The new rate schedule, however, may not be publicly acceptable. Local management must make this analysis and provide the recommendations for a decision on the rate structure for the facilities.

Another example is equally valid. Assume that a major terminal expansion program has been funded by revenue bonding. Much of the income in the new facilities will be supplied by tenants occupying space at fixed rental rates. A good deal more income will be provided by concessionaires who sell products or services to the public and who pay a percentage of their gross income to the airport operator. The local manager is in the best position to guide the design and layout of the new concession locations and even to determine what type of concessions they should be. Standards, guidelines, and assistance from others are all helpful, but the local manager must ultimately make the recommendation on these particular matters.

Managing in a Cost-Effective Manner

The discussion thus far has been oriented toward the acquisition of new or increased landside capacity, and most of the remarks have been directed toward the design and construction of additional capacity. Cost effectiveness is equally important in the management and operation of the additional capacity once construction is complete. Clearly, in the analysis of the feasibility and cost effectiveness of, let us say, a terminal extension, one is obliged to examine the continuing operating costs and potential gross revenues. These items must both be considered in the design state, particularly if revenue bonds are to be used to finance the construction of the terminal expansion and if the net revenues projected from the added capacity are expected to retire the bonds.

Most commercial airports operate with an individually tailored cost-accounting system—one that suits its purposes reasonably well and one that must also tie into the financial reporting system of the parent organization, a city, for instance. Larger airports have found it convenient and, in fact, almost mandatory to adopt the cost center

approach to the financial management of their facilities. Using this procedure, management is in a good position to review its income and its expenditures by functional area, by building, and even by geographic location. In so doing, it can quickly determine where the strong and weak producers are and where additional efforts are required to secure a better net return (or minimize net losses), so that the airport can be established on a pay-as-you-go basis as much as possible, or even on a profit basis.

Many activities at an airport do not pay for themselves and must be subsidized by those that do. The terminal is one area that does pay for itself, and its income is based on the form and style of the leases and agreements under which the various tenants occupy space and conduct business. Since the terminal is first a location for intermodal transfer, the principal occupants of the terminal building are the airline companies. These companies and other businesses that provide goods and services occupy terminal space for a fixed period of time and for a fixed amount of rent payable to the airport. The types of products and services available at the airport, the degree to which they are exposed to the public, and the amounts payable to the airport indicate to a large extent how well the terminal is being managed. Management must find the most judicious blend of passenger convenience, maximized revenues, and minimized operating expenses so that net revenues are adequate and public convenience is ensured.

Parking lots, terminal roads, and access roads that feed the terminal area are also important elements. The costs for providing additional capacity for these elements are monumental. Management's decision with regard to which type to provide will hinge on juxtaposing the space and funds available for additional parking with the perceived level of service and convenience desired for its public. In this effort, the concept of pure cost effectiveness is at odds with public convenience and acceptance, and management will find itself under considerable pressure to satisfy parking demand problems in ways that are not particularly cost effective. In any event, parking lots are major revenue producers, and a manager should pay a good deal of attention not only to the capacity of the project but also to the management of that capacity in a way that maximizes service to the public while at the same time maximizing net revenues to the airport.

To manage these facilities in a cost-effective manner requires the application of the following tested business administration techniques, modified as necessary to meet the local situation:

1. Knowing and controlling expenses through the use of budgets and budget performance reports;
2. Establishing routine maintenance work orders to the greatest extent possible, "normalizing" the flow of expenses, and minimizing the chances for large unforeseen expenditures;
3. Examining the traveling population to determine the best types of concessions and services businesses; and
4. Paying attention to public needs and complaints and providing the services needed.

The day-to-day management of a major airport is much akin to running other businesses of comparable size and public involvement, and as in other businesses the quality of the management determines the quality of the operation.

IMPROVING MANAGEMENT INPUT

Identifying the Barriers

In the planning for a major terminal expansion, one major airport recently went through the entire data and forecast gathering procedures, secured information from each major tenant of the proposed expansion, and arrived at a project whose scope each of the tenants found acceptable. Financing was arranged, plans and specifications were prepared,

a contract bid was awarded, and construction was under way when one of the principal tenants—an airline—merged with another and changed its connections from one airport to the airport under development. The local government found that the data on which all the plans and specifications and the ultimate construction contract were based were nearly worthless, that the new facilities would be used to capacity at the moment of occupancy, and that the planned-for flexibility and expansion capabilities were gone. In short, 1985 arrived 12 years too soon, and the constraints on financing, timing, and construction were such that no major changes could be made.

This falls in the realm of unknown technical information about which little can be done. Even if local management had divined the merger and all its local ramifications in advance, there was simply no way in which the additional space could be created and financed without the firm commitment of the airline to occupy the space.

The Civil Aeronautics Board may authorize new or substantially improved service to a given city and, in so doing, authorize the entry of one or more new airlines to provide that service. This can create serious space difficulties, and, although management may be totally aware of the effort to have that new service authorized and instituted, it may not be in a position to provide the necessary landside facilities to house the new service operators in advance of the time the service is authorized and the carrier is designated. In any event, the result is likely to be the same as in the preceding example—a crash program undertaken to provide the additional landside capacity and one that may not be based on rational planning that gives consideration to the long-range effects.

The institutional factor represented by extended controls and reviews from state and federal agencies is another example of an unknown quantity—a new regulation—that limits the chance for quality management input. Some airports have been unable to improve the access to the terminal area because of the effects of new or tightened federal and state regulations and review procedures. Similarly, some airports cannot expand parking lots on a timely basis because of comparable impediments.

Despite these apparently negative factors, a number of the other elements do lend themselves to processes and procedures by which the quality of management input can be improved. For instance, the quality of a terminal expansion program can be greatly enhanced if the participants in the planning process understand the need for quality data and activity projections. If management can impress on the user organizations how important securing accurate data and forecasts is, the entire process can be enhanced and the ultimate product considerably improved.

If a review of the other elements requiring management consideration (i.e., community support, organizational capability, financial flexibility, and timing) discloses that any one of these elements represents a negative influence, an action program to convert it from a minus to plus can be undertaken. By avoiding the "this is how we did it before" approach and looking at new techniques, materials, and procedures, a manager can dispose of many situations before they develop into serious problems.

Education and Training

There are, of course, other methods by which the managerial process can be improved. An objective of Workshop 2 was to "recommend data, practices, education, and training to assist management in the performance of its role." These words suggest that the practice of management can be improved with additional education and training, and I subscribe to this concept. In this context, it may be well to review and appreciate just how far airport management has come.

Before World War II when civil aviation was but an infant, airports as we know them today simply did not exist. A grass strip and a little shanty on the edge of town served as both the landing site for the airmail plane and the site from which barnstormers excited the local population. Often this activity took place on a municipally owned park, and the manager of the facility (if there was one) was the park superintendent or the road superintendent; day-to-day care was assigned to a person at the custodial level.

After World War II, civil aviation developed rapidly as did the role of airports,

although the local jurisdictional situation did not change much. The responsibility for operation and maintenance continued to remain with the highway commission or the parks and recreation department, but many communities hired an ex-World War II fighter pilot to become the local airport manager on the theory that, if he knew how to fly, he must know how to take care of the place from which the airplanes flew. The degree to which the airport grew was largely a function of the expanding airline routes, and the manner in which the airport grew was more likely to be dictated by the whims of its users than by careful planning and projections for the future.

In succeeding decades, however, communities recognized the importance of their air transportation facilities and took the necessary steps to create a workable organization and a sound financial program. In so doing, they insisted on better trained personnel to assume the management of the airports. Managers of most commercial airports today are likely to have a college degree and to have been working toward this position for several years.

The question can be asked, Has management as a field progressed to the point where it can be called a profession? Towle (1) suggests that the following 5 criteria can be used to evaluate whether a given endeavor is a profession:

1. The acquisition of scientific principles and a systematic body of knowledge,
 2. The adoption of ethical standards for professional practice,
 3. The creation and proliferation of professional associations or societies,
 4. The establishment of standards and requirements for entry into the profession,
- and
5. The opportunity for a challenging and rewarding career.

Towle thinks that management now meets those criteria. I would extend that and state that airport management is now a full-fledged profession. Airport managers have (a) a systematic body of knowledge for use in dealing with each of the major functions such as planning, construction, maintenance, operations, business administration, and public relations; (b) an ethical standard for professional practice—either the personal beliefs of the individual manager, a generalized code adopted by a national airport professional association, or one imposed by the employer; (c) a professional association, the American Association of Airport Executives (AAAE); and (d) a dedication to their profession because they recognize the importance of their role to the community and the opportunity to be of service to society at large. Although the practice of airport management does not require the passing of an extensive examination as a prerequisite to entry, airport managers increasingly recognize the advantages of acquiring the breadth of knowledge and skills that are necessary to achieve executive status within the AAAE.

Managing commercial airports is not so greatly different from managing other businesses; it requires education and training, principally in the field of business administration, not only because it encompasses items such as leasing, financing, real estate, and business law but also because it is more likely to require the skills of a generalist as opposed to a specialist. The breadth of knowledge and responsibilities required mitigates against the airport manager coming from the ranks of specialists, such as engineers and accountants. Ironically, perhaps the least essential qualification is that the manager be a flier.

Management can be assisted in the performance of its role by continuing education. Technicians in certain fields recognize that the knowledge developed within the preceding decade exceeds the total developed in the last 20-, 50-, or even 100-year period and that to stay current they must either do extensive reading of technical material in their field or return to school from time to time. Even in the less technical fields, including management, many companies have found it both expedient and profitable to send middle and upper level managers to some form of schooling to acquaint them with recently developed practices and principles and to reacquaint them with the learning and thought processes they gained many years ago. I think this process is quite helpful for airport managers as well. Although we may be skilled in matters such as aviation leases and contracts, cost accounting, budgeting, construction management, building

supervision and management, and federal regulations, many of us do not know much about computer technology, environmental concerns, and personal management and civil rights.

Many universities and colleges now offer short courses (one or more weeks of concentrated study), and some are also developing graduate courses for noncollege graduates. The opportunities are available and increasing, and the professional manager should take advantage of them despite the pressures of the day-to-day job.

AMERICAN ASSOCIATION OF AIRPORT EXECUTIVES

The American Association of Airport Executives has a number of classes of membership; the highest is the executive membership. Acceptance into this class requires approval by the AAAE Board of Directors after a recommendation by the chairman of the Board of Examiners that the candidate has, through an evaluation process that consists of writing a thesis and passing a comprehensive 2-day written examination, demonstrated that he or she is worthy of executive membership. One of the principal objectives of the AAAE is to provide its members with current information on management and technology and to provide the sources and means for improving managerial skills at all levels. Further, the association actively cooperates with educational institutions to offer courses and sponsors seminars, conferences, and other training opportunities.

In my judgment, the most effective way to improve the managerial processes is for those who enter the profession to obtain a broad and complete basic business education, acquire specific skills by working alongside professionals in the business, and follow a planned program of continuing education that emphasizes the acquiring of additional knowledge and skills in subjects generally related to airport management but overlapping other fields of endeavor as well.

SUBJECTS FOR RESEARCH AND DEVELOPMENT

Numerous studies have been made by industrial psychologists and research groups to determine those qualities that make for professional managers and successful management, but none has been oriented toward airport management per se. The following are some areas that might be helpful to airport management.

1. Survey a range of airport users and tenants to determine where they think airport management is strong or weak and why they think so.
2. Ask a cross section of airport managers, Knowing what you know now, what would you do differently if time were moved back 10 years?
3. Ask a cross section of airport managers, What are your biggest problems, and would these problems be more easily solved if you had more or a different level of education and training?
4. Examine a series of airports whose ownership and operation differ and determine whether municipal airports supply better or worse management than airports owned and operated by airport boards, airport commissions, or airport authorities that are slightly more insulated from day-to-day politics and problems.
5. Study a representative group of successful airports to determine whether common management denominators exist and whether and how they can be extrapolated to other airports.

Doubtless, other areas could be researched, and other studies could address more specifically the managerial process as it relates to the acquisition of additional landside capacity. In all honesty, however, I cannot seem to delineate such a study, and although this may be an individual shortcoming, perhaps it relates in some measure to the proposition I advanced in the early pages of this paper: Although standards and computers can help, there is no one best way that can be generally applied to solve the landside capacity problem.

SUMMARY

Management does not lend itself particularly well to the application of generalized standards. A number of external elements require management consideration, and a number of management inputs bear on those elements. Finding a solution in the most cost-effective manner is a popular concept with a good deal of merit, but it is perhaps fallacious to attempt to select a level of capacity with cost effectiveness as the single or even principal guiding consideration, for there are other factors to be evaluated that dilute, if not totally overrule, this concept. Management inputs can be improved essentially through better initial education and continuing education.

Solving the landside capacity problem in Denver may require a substantially different managerial approach or emphasis than solving a similar problem in Tampa. The statutes that permit and guide the issuance of both general obligation and revenue bonds in Denver may differ substantially from those in Tampa, which means that the managerial process by which an entire project is established and financially planned will be different. The distribution of local and transient traffic is substantially different, and thus the concession types and locations will be different. The organizational structure and political framework within which both airports operate are substantially different and require drastically differing managerial approaches.

Airport management is an art because there are people-to-people contacts, continuing negotiations, and public and community relations. It is a science because construction techniques must be employed, maintenance routines established, standardized cost accounting systems used, and operating procedures established and assigned.

To end this paper on a light note, I am including the definition of the late Foster Smith, former chairman of the Rockford Airport Authority, who indicated some 10 years ago perhaps better than anyone else has the demands placed on an airport manager (2):

AIRPORT MANAGER WANTED

Must have extensive background in aviation—must not be too old or too young—as someone said, “Old enough to know better and young enough to enjoy it.”

Must have engineering experience and practical know-how in all phases of building roads, runways, taxiways, hangars, fuel installations, including jet fuel, electrical systems, sewer systems, drainage systems, water systems, gas line systems, and all other utility systems.

Must be familiar with laws pertaining to zoning, taxes, aviation, fire codes, electrical codes, water, plumbing and gas codes, real estate leases, easements, civil service, civil rights, Federal aid to airports, State aid to airports, budgets, bond issues (general obligation and revenue), traffic, financing in general, and investments.

Must know psychology, insurance, labor mediation, public relations, public speaking, farming, mechanics, politics, horticulture, and pest eradication.

Must be able to understand Township Assessors and Supervisors, Township Road Commissioner, Township Health Commissioner, the Mayor, City Council members, City Manager, City Street Superintendent, City Water Superintendent, City Health Department, City Building inspectors, the Sheriff, Chief of Police, State Police, State Roads and Highways Department, County Highway Department, County and City Zoning Officers, State Aeronautics Commission, Federal District Airport Engineer, FAA Regional Director and his staff, FAA Washington office, including the heads of all the divisions in FAA. He is not required to like these people; just be able to get along with them.

Should be well and favorably known to the Governor, the Congressman, Senators, State Representatives and State Senators, all local newspaper editors, and at least one National Aviation Editor, preferably George Haddaway.

Must be willing to work under a low budget and with little or no job security and be available 24 hours a day, seven days a week—should be able to go without sleep for several days at a time during snow storms, floods, hurricanes, and VIP visits.

Must have FBI clearance and possess visionary and prophetic powers concerning the future of helicopters, VTOL, air traffic, land use, noise abatement, next year's TSOs, FAA's policy decisions next week and next month on flight service stations, weather stations, tall structures, towers, general aviation, and air lines—and be able to predict snow storms accurately.

Must be a first rate housekeeper and landscape man; must know paints, painting and color re-

quirements, tree raising, seeding, fencing, garbage disposal and sanitary landfill techniques and procedures.

Should be able to see his airport and its future from the point of view of the community, the taxpayer, the pilot, the aircraft owner, the passengers and users, and the Airport Commission.

Must be familiar with the prevailing contract and lease terms and prices for landing fees, floor space, parking space, fuel flowage fees, car rentals, restaurant operation, liquor concession, clean towel and window-washing service and the nondiscriminatory provisions required in all contracts by FAA.

Must have good basic knowledge of and be able to operate a police department and fire department, and know about wages, salaries, fire and police equipment, including crash procedures off and on the field.

Must be skilled in obtaining surplus equipment for nothing and be able to rebuild and rehabilitate such equipment without cost.

Must have basic knowledge of accounting, particularly cost accounting and its application to airports, and know about insurance plans for employees.

Must be able to conduct a constant program of education, designed to convince everyone of the necessity for and the value of the airport to each man, woman, child and business within the taxing boundaries.

Must be diplomatic in dealing with all local organizations that request use of the runway as drag strips, free land for pistol range, dog and horse shows, dog pound, tennis courts, trap shooting, ball diamonds, sports car rallies, picnics, and free gravel.

Must be patient with representatives of drum and bugle corps, policeman's ball, sheriff's ball, fireman's ball, Boy Scouts, Girl Scouts, Red Cross, Salvation Army, childrens homes, Foundation for Arthritis, cancer, muscular distrophy, heart, mental diseases, polio, home for wayward girls, and church conventions.

Above all he must have a sense of humor and a recommendation from AAAP.

Preference may be given to a Democrat from Texas and we may also consider as trainee, a Socialist from Minnesota.

Write Box 13 and do not contact present manager—he doesn't know he's leaving.

REFERENCES

1. J. W. Towle et al. *Ethics and Standards in American Business*. p. 256.
2. F. Smith. *Airport Manager Wanted*. Address at the American Association of Airport Executives Annual Conference, Fort Worth, April 27, 1965.