

Port Management Control Systems A Simplified Decision-Making Tool

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The Need to Determine Financial Performance

In the current climate of economic uncertainty and increasing citizen demand for accountability in public enterprises, more and more ports are focusing attention on efficiency of operations and return on investment. But determining a port's financial performance in order to formulate intelligent policy decisions can be a difficult task.

For many port managers and commissioners, trying to judge a port's financial performance from its financial statement is often an exercise in futility or an exceedingly time-consuming project. The accounting system for most ports is simply a "scorekeeping tool." The financial statement is often viewed as a compliance document, attesting to the fact that the port has followed the accounting procedures dictated by the state auditor or some other administrative entity. In some ports, the financial statement and all accounting functions are the sole purview of the port auditor; and aside from reviewing financial statements from time to time, the manager and/or commissioners do not rely on the accounting system for major input to decision-making stems from a lack of understanding of the financial data and/or a mistrust of the data presented. For a port to benefit fully from its accounting system, it is necessary to isolate specific data and use them, alone or in concert with other data, to provide input into the decision-making process.

A Simplified Evaluation System

Thus it seems obvious that to analyze their operations in a meaningful way, ports need new or at least revised procedures. Washington Sea Grant, in cooperation with the American Association of Port Authorities and more than 70 public port authorities in the United States and Canada, has developed a simplified financial performance indicator system that can be used to measure, rapidly and accurately, how efficiently a port uses its resources, how carefully it controls its expenses, and how profitable it is. This system is called the Port Management Control System.

The System uses a total of six financial performance indicators – four return on investment (ROI) measurements to determine rate of return on various port assets and two other financial performance indicators to measure control of expenses and profitability. One rate of return measurement (Operating ROI), one profitability measurement (Operating Margin), and one cost control measurement (Operating Ratio) are used to measure a port's operating activities. The rate of return measurements (ROI "A", ROI "B", and ROI "C") are used to measure and determine the relative importance of both operating and nonoperating revenue/expense segments of a port's activities.

The operating activities of a port are defined as those activities that use the port's net capital assets – its land, buildings, and equipment. These activities produce revenues (operating revenues-OR) and also incur expenses for operations and maintenance (operating expenses-OE). The income derived from these operating activities is net operating income (NOI).

To measure the return on investment (Operating ROI) that a port's operating activities provide, the net operating income (NOI) is divided by the port's net capital

asset value (NCA), the value of a port's land, building, and equipment minus accumulated depreciation. (Net operating income = operating revenues minus operating expenses; and net capital assets = value of capital assets minus accumulated depreciation.) Knowing this return on investment on net capital assets allows a port to measure, in a quantifiable way, its ability to generate earnings from its land, buildings, and equipment.

Operating Margin and Operating Ratio – Two Keys to Control

The operating margin is used to measure the profitability of a port's operating activities. It shows the net operating income as a percentage of operating revenues, and it is calculated by dividing net operating income by operating revenues.

A port's ability to control its operating expenses is measured by the operating ratio, which indicates the percentage of operating revenues consumed as operating expenses. This ratio is determined by dividing operating expenses by operating revenues.

A port, through its tariffs, rentals, fee schedules, and moorage rates, can exercise some control over its operating revenues, and through budgeting, cost control, and other measures, it can exercise some control over its operating expenses. Thus the operating margin and operating ratio are the two main keys to a port's management control program. If a port finds that its rate of return on investment on its net capital assets is declining or below the standards set but the commission/management, it can change the rate by raising revenues or cutting costs or a combination of both. The operating ratio and operating margin provide a way to determined trends in profitability and expenses.

Determining Relative Importance of Specific Revenues and Expenses

In addition to measuring return on investment, control of expenses, and profitability for a port's operations, it is possible to use other financial indicators to determine the relative importance of specific expenses or revenues to the overall financial condition of the port. To do this, the return on investment on the port's total assets is calculated after the inclusion of certain revenues and/or expenses.

The first return on investment measurement (here designated ROI "A") determines a port's ability to generate earning after all operating and non operating revenues and expenses have been included but prior to inclusion of tax revenues and depreciation. This return on investment figure is calculated by subtracting the total of all operating and nonoperating expenses from the total of all operating and nonoperating revenues (Net Income "A" or NI"A"), and dividing the answer by the port's total assets.

Another return on investment measure (ROI "B") determines a port's ability to generate earning after paying its bills both to outside parties and to itself (depreciation) but prior to receipt of tax revenues. This calculation is made by subtracting all operating, nonoperating and depreciation expenses from the total of all operating and nonoperating revenues (Net Income "B" or NI "B") and dividing the answer by the ports total assets.

The final return on investment measurement (ROI "C") determines a port's ability to generate earnings after payment of all expenses and receipt of all revenues, including taxes. This is calculated by subtracting all operating, nonoperating and depreciation expenses from all operating and nonoperating revenues including tax revenues (Net income "C" or NI "C"), and dividing the answer by the port's total assets.

Format for Computing Financial Performance Indicators

To benefit most from the Port Management Control System, a port should use the various indicators in time series analysis over at least a three-year period. Because of the seasonal nature of the revenue and expense flows of most ports, it may not be possible to make valid comparisons over accounting periods of less than a year (e.g., quarterly or semiannually).

The following format in Table A allows the computation of all six financial performance indicators in a logical sequence and a concise way:

TABLE A

	1987*	1986*	1985*	1984*	1983*
Operating Revenues (OR)	\$ 78,541	\$104,349	\$ 94,746	\$ 85,770	\$ 79,408
Operating Expenses (OE)	<u>52,688</u>	<u>79,562</u>	<u>73,294</u>	<u>68,342</u>	<u>62,562</u>
NET OPERATING INCOME (NOI)	\$ 25,853	\$ 24,787	\$ 21,452	\$ 17,428	\$ 16,846
Non-Operating Revenues	\$ 5,192	\$ 4,895	\$ 4,600	\$ 4,915	\$ 7,128
Non-Operating Expenses	<u>5,435</u>	<u>4,615</u>	<u>4,752</u>	<u>3,574</u>	<u>1,825</u>
NET INCOME "A" (NI "A")	\$ 25,610	\$ 25,067	\$ 21,300	\$ 18,769	\$ 22,149
Depreciation	\$ 6,225	\$ 4,704	\$ 4,526	\$ 3,614	\$ 3,538
NET INCOME "B" (NI "B")	\$ 19,385	\$ 20,363	\$ 16,774	\$ 15,155	\$ 18,611
Tax Revenues	\$ 5,631	\$ 5,513	\$ 5,169	\$ 4,919	\$ 4,710
NET INCOME "C" (NI "C")	<u>\$ 25,016</u>	<u>\$ 25,876</u>	<u>\$ 21,943</u>	<u>\$ 20,074</u>	<u>\$ 23,321</u>
Net Capital Assets (NCA)	\$181,928	\$148,089	\$148,543	\$136,440	\$104,700
Total Assets (TA)	\$236,908	\$242,707	\$220,953	\$206,337	\$190,768
*ALL DOLLAR AMOUNTS IN \$,000					
OPERATING ACTIVITY INDICATORS:					
Operating ROI (NOI/NCA)	14.21%	16.74%	14.44%	12.77%	16.09%
Operating Margin (NOI/OR)	32.92%	23.75%	22.64%	20.32%	21.12%
Operating Ratio (OE/OR)	67.08%	76.25%	77.36%	79.68%	78.79%
OTHER INDICATORS:					
ROI "A" (NI "A"/TA)	10.81%	10.33%	9.64%	9.12%	11.61%
ROI "B" (NI "B"/TA)	8.18%	8.39%	7.59%	7.34%	9.76%
ROI "C" (NI "C"/TA)	10.56%	10.66%	9.93%	9.73%	12.22%

Explanation of Table

The following explanation of the indicators and how they are calculated should be kept in mind in using the format shown in the above table.

Operating Activity Indicators:

Measurement of the return on investment on net capital assets indicated the rate of return on the port's net capital assets (land, buildings, and equipment):

$$\text{Net Operating Income} / \text{Net Capital Assets} = \text{Operating Return on Investment}$$

Measurement of the profitability of the port's operating activities:

$$\text{Net Operating Income} / \text{Operating Revenues} = \text{Operating Margin}$$

Measurement of the port's ability to control operating expenses:

Operating Expenses / Operating Revenues = Operating Ratios

Other Indicators:

Measurement of the rate of return on operating and nonoperating activities:

$$\text{Net Income "A"} / \text{Total Assets} = \text{Return on Investment "A"}$$

Measurement of rate of return on all operating and nonoperating activities after payment of depreciation:

$$\text{Net Income "B"} / \text{Total Assets} = \text{Return on Investment "B"}$$

Measurement of the rate of return on all activities of the port after payment of depreciation and receipt of tax revenues:

$$\text{Net Income "C"} / \text{Total Assets} = \text{Return on Investment "C"}$$

Performance Indicators of Specific Functions

To receive the maximum decision-making benefit from this Control System, a port must use it to measure financial performance on a functional basis. This functional analysis can often be the major factor in resource allocation decisions to expand, contract, or eliminate a specific port function or to increase or decrease the amount of money budgeted for a specific function. Thus functional financial analysis can provide a valid guide for decisions on funding both operating capital and budgets as well as the creation of new functional areas/services/

The following format in Table B illustrates a method of analysis for a specific port function.

TABLE B

	1987*	1986*	1985*	1984*	1983*
Operating Revenues (OR)	\$ 6,276	\$ 7,746	\$ 7,036	\$ 5,894	\$ 6,138
Operating Expenses (OE)	<u>2,342</u>	<u>2,195</u>	<u>1,848</u>	<u>1,240</u>	<u>1,275</u>
NET OPERATING INCOME (NOI)	<u>\$ 3,934</u>	<u>\$ 5,551</u>	<u>\$ 5,188</u>	<u>\$ 4,654</u>	<u>\$ 4,863</u>
Net Capital Assets (NCA)	\$ 34,684	\$ 31,673	\$ 27,059	\$ 23,012	\$ 22,108
* \$(000)					
OPERATING ACTIVITY INDICATORS:					
Operating ROI (NOI/NCA)	11.34%	17.53%	19.17%	20.22%	22.00%
Operating Margin (NOI/OR)	62.68%	71.66%	73.74%	78.96%	79.23%
Operating Ratio (OE/OR)	37.32%	28.34%	26.26%	21.04%	20.77%

Using the System – Analysis

The Port Management Control System is a monitoring tool that permits measurement of rate of return on investment, profitability, and expense control efforts for all port functions and/or specific functions. Usefulness of the System depends on accurate analysis of the data and then proper use of the analyzed data to make policy/management decisions.

Ports are heterogeneous. Since no two public port authorities normally have the exact same functions, it is virtually impossible to have any valid industry standards. This

heterogeneousness also severely limits the possibility of validly comparing the financial performance indicators of one port with another.

Thus, in order to gain the maximum benefit from using the Control System, each port must establish its own “standards.” These standards may be established by past results or may be independently determined at the management or commission level as “target” standards.

Analysis of the data is dependent, to a large extent, on criteria established by each port individually; however, some generalities may be used as a basis for analysis.

Ideally, the operating margin or profitability measurement should either remain constant or preferably increase over time in order to indicate a steady or an increasing profit level. Conversely, the operating ratio (the expense control measurement) should either remain constant or decrease over time in order to indicate that costs are under control. Since the operating margin is the reciprocal of the operating ratio, if one increases, then the other must decrease or vice versa.

If no change or only a “slight” change occurs in the operating margin//operating ratio, no action may be required. However, if a “significant” change occurs, the reasons for that change should be determined. (“Significant” may be one percentage point or less, depending on the individual port.) Close scrutiny is particularly important if the “significant” change is a decrease in the operating margin/increase in the operating ratio from one time period to another or if there is a trend over a series of time periods.

Analysis of return on investment date (ROI) normally falls into two categories – analysis from one period to another, and analysis of data against a set of standard. If ROI data show a downtrend or indicate that the ROI standard is not being met, then some action may be required. The effectiveness of such action depends almost entirely on the degree of control that the port manager and/or commissioners have on the components that make up the ROI measurement. Operating ROI is made up of components largely under the control of port management and hence is more susceptible to correction than are ROI “A,” ROI “B,” and ROI “C,” whose components are not so easily controlled by managerial/policy actions.

In addition to being analyzed against an established standard or from one time period to another, ROI “A,” ROI “B,” and ROI “C,” can also be analyzed by comparison with one other. For example, the relative importance of tax revenues can be ascertained by comparing ROI “B” with ROI “C,” or the effect of depreciation can be determined by comparing ROI “A” with ROI “B.” Such comparisons can be made for a single period or as a trend over two or more time periods.

Using the Port Management Control System as an effective monitoring tool may require a certain amount of time and study by both the supplier of the data (normally the port auditor) and the ultimate users of the data (the port manager and/or commissioners). However, as a port becomes more familiar with the system and more experienced at using it, some methods of analysis will stand out as more valid than others as precursors of significant change.

Assistance in implementing this Port Management Control System may be obtained by contacting Tom Dowd, Port Industries Specialist, Washington Sea Grant, University of Washington, Seattle, Washington 98195; (206)0545-2430

Additional single copies of this leaflet may be obtained by contacting the office listed below. Bulk rates available upon request.

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