

these firms. The combining of the two approaches offsets, to a certain extent, some of the inherent limitations in each approach. For example, one of the most common types of packinghouse studies involves the determination of average costs and volumes for each of a group of sample packinghouses. These cost-volume data are frequently presented as a scatter diagram, with an average regression line fitted to the data. The fitted line or curve shows the average relationship between volume and cost. Unfortunately, this type of analysis includes a number of limitations—(1) accounts of modern business may not be entirely statements of facts but are, to a large extent, expressions of opinions based partly on accounting conventions, partly on assumptions, explicit or implicit, and partly on judgment; (2) the price paid for the various factors of production may vary from firm to firm, and accounting data do not provide a basis for making these data comparable; (3) output is usually expressed on a seasonal or annual basis and the records do not always provide information necessary to adjust the varying rates of output; (4) the cost and volume relationship represents some combination of the effects of scale and of excess capacity, with insufficient detail to determine the net effect of each; (5) the reported fixed costs reflect variation in such items as purchase dates of packinghouse and equipment, and rates and methods of depreciation; and (6) these studies may not provide a basis for comparing the relative efficiency of alternative methods of operation, because accounting records do not reveal detailed information regarding work methods, delays and idle work time. As a result, it is only by chance that the cost-output observations estimated from accounting data will approach the lowest possible average cost of producing any output when management has had adequate time to make the necessary changes in all production factors. These limitations can be overcome, at least in part, by combining accounting with engineering data into what might be termed an economic-engineering approach.

In this study physical input-output data of labor and equipment used in each job category were obtained through work-sampling and time study techniques. From these data production standards were developed. Physical inputs required for varying rates of output were synthesized for alternative work methods for each operation; to these, uniform prices were applied and costs calculated. Compatible work methods were synthesized into stage cost functions, which became the broad