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Return on Investment -- Its Methods and Uses

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RETURN ON INVESTMENT--ITS METHODS AND USES

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(Chairman)

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

A company's success depends on its effective use of capital. In employing its capital a business should have a goal of achieving the optimum investment possibilities. This goal should offer the prospect of a profit on capital invested greater than any alternative use of such capital. The problem then in business decisions is one of choosing the correct alternative or the most desirable of several courses of action.

In some cases the investment decision is intuitive, in which case there is no systematic attempt to weigh or measure the advantages and disadvantages of each business proposal. This approach may be used because the information available does not lend itself to systematic methods or because the decision maker is not aware of any of the systematic approaches.

If at all possible, investment decisions should be reduced to a quantitative basis and these projections compared in a systematic manner. One such possibility is to utilize the return on investment concept.

The return on investment approach was first developed within General Motors Corporation by Donaldson Brown. Since that first systematic approach was implemented, the concept and its use have developed greatly.

Return on investment is viewed differently by different businessmen. For example, outsiders such as bankers, financial analysts, and stockholders are primarily concerned with the return on equity which includes dividends paid and utilization of retained earnings. Business managers, however, view return on investment from the financial aspects and comparative performance approach.

Basically, this paper will approach the concept of return on investment, the methods used to determine return on investment, and the application of return on investment from the business manager's point of view. The discussion will attempt to show how return on investment can serve as a tool in systematic investment decisions.

CHAPTER II

CONCEPT OF ROI

The concept of return on investment has been used for a long time as a measure of investment performance. There are limitations to its use and it cannot be applied to every investment proposal. It must be realized that each possible investment does not produce a tangible return, and if there is no tangible return, the concept cannot be applied. For example, who can determine the true return from new employee recreational facilities, or the replacement of a new air-conditioning unit in a manufacturing plant, or perhaps a new front to an office building?

What this tends to imply is that there are two types[1] of investment. One type, referred to as a sustaining investment, is used to describe investments that are "must have" items. In other words, these do not necessarily produce a tangible savings or income, rather the investment is needed to keep the business in operation. The second type, a generative investment, describes an investment which promises a tangible return to the business measurable in a quantitative form such as dollars. It is this latter type of investment to which the return on investment concept is applicable.

In the return on investment concept, various meanings can be applied to the word "return." It can be used to indicate the income generated from the investment, or any savings, expense reductions, or expense avoidance that may be expected to result. Exactly how it is used will depend on each particular situation.

Also, the phrase "return on investment" can be employed in various ways. Basically there are two broad areas in which it is used as a measure of performance. The first area deals with the overall objectives of the company--that of a return on operations. The second area is more limited in that it deals with the return on a specific investment such as the return generated from a new machine.

The basic formula used to express the return on investment concept is as follows:

$$\frac{\text{income X 100}}{\text{investment}} = \text{rate of return on investment}$$

From this equation it is possible to note a very important factor--the relationship that income bears to investment. The larger this rate of income to investment, the better the return on investment. Another factor to be considered which is basic to the return on investment concept is that of turnover. It is obvious that the more times a certain rate of return on an investment is obtained, the larger the actual return on that investment becomes.

David P. McElvain illustrates the turnover concept in the following manner: ". . . a 10% rate of return which turns twice during a year earns more than a 20% return which turns only once, as follows:"[2]

	Investment of $1.00	
	10% Return	20% Return
	Turns 2 Times	Turns 1 Time
Net return for the year	$0.21	$0.20
Computed as follows:		
1st turn		
Capital invested	$1.00	$1.00
Rate of return	10%	20%
Net return	$0.10	$0.20
2nd turn		
Capital invested	$1.10	-
Rate of return	10%	-
Net return	$0.11	-
Net return for the year	$0.21	$0.20

This in essence means that a satisfactory rate of return can be achieved by either obtaining the desired rate in just one turnover; or by obtaining smaller rates more often. Where possible, the latter method should be used because when products are turned over more rapidly, a somewhat lower percentage of profit on sales can be justified, which in turn may be effective in increasing the turnover.

With these two factors--rate of return on investment and rate of turnover--the basic formula previously stated can now be expanded to

represent the exact formula used in the area of return on operations. It is expressed as follows:

$$\frac{\text{profit}}{\text{sales}} \times \frac{\text{sales}}{\text{capital employed}} = \text{return on investment}$$

Profit divided by sales represents the rate of profit to sales, and sales divided by capital employed represents the turnover of the investment. Even though mathematically this formula could be presented without the sales figure, since it cancels out in the calculation, it should be used so that the relationship of the two factors is understood.

The above formula applies directly to the area of return on operations, but it does not apply directly to return on specific investments. It is presented here since it clarifies the two factors--rate of return and turnover. This formula for return on operations and the formulas and methods used to determine return on specific investments will be presented in detail in Chapter III.

Before the concept of return on investment can be utilized, the terms used in the concept must be distinguished. In the return on operations formula these terms are profit, sales, and capital employed; in the return on specific investment formula the terms may include savings, income, annual cash inflow, and investment.

Although none of these terms is difficult to understand, an explanation of each will clarify their usage. In the return on operations

area the following questions may arise in regard to these items: What profit figure should be used--net operating profit, net income before taxes, or net income after taxes? Are sales gross or net? Is the capital employed based on total assets, or total equity? If total assets, are they at gross, depreciated value, or replacement value?

When dealing in the area of return on specific investment, the questions may be similar to the following: What items are included in the income, savings, and annual cash inflow? How is investment interpreted? The answers to these questions may vary depending on the different views taken in applying the return on investment calculation. It is important that this thought be kept in mind.

When the operations of a company as a whole are being reviewed, the net income after tax should be used in the return on investment calculation. The reason being, since management will not have access to the tax dollars, the return on investment should not be calculated using the tax dollars. Justification for the use of the net income before tax is that not all the earnings of the company fall into the same tax brackets. Consequently, the before tax income may be more representative from the standpoint of total profit. Using the net operating profit is justified when a company is attempting to compare the return on investments from its divisions. The reasoning here is that the operating costs such as cost of goods sold will apply to each individual division, but the nonoperating

costs such as selling and administrative expenses apply to the entire company as a whole.

Generally there is no problem of distinction in regard to sales. The figure which is normally used is net sales rather than gross sales. The obvious reason for its use is that the net sales represent potential collections; whereas, it is never felt that gross sales represent this potential due to items such as sales returns which will reduce the gross amount.

If outsiders, for instance bankers, financial analysts, and stockholders, view a company's return on investment, they are primarily interested with the total equity in regard to capital employment. They are concerned with the utilization of debt service, dividends paid, and retained earnings. When return on investment is viewed from within the company, total assets are used to represent the meaning of capital employed. Total assets are made up of both current and fixed assets.

Current assets such as net receivables, cash, and inventories use the historical figures taken from the financial statements. In this respect it is simple to determine their amount. However, it is possible that a problem in regard to inventory valuation may cause difficulty when attempting comparisons of return on investment with other companies. The reason for this is that not all companies use the same method of inventory valuation.

Fixed assets usually have more variations than current assets because they may be valued at the original cost, depreciated book value, or the replacement value.

The pros and cons for the first two bases are quite numerous.

(1) Original Book Value. Those in favor of the original cost basis argue that:
   (a) It provides some equalization of facility values of the different divisions or companies, especially between those with old plants built at relatively low cost and those with new plants at high costs.
   (b) Assets of manufacturing companies, unlike mining companies, are considered to be on a continuing rather than on a depleted and abandoned basis.
   (c) Gross assets of one plant can be compared with those of another plant where depreciation practices may be different.
   (d) Accrued depreciation is not deducted from the gross asset value of property since it represents the retention in business of the funds required to keep intact the stockholders' original investment. Actually, fixed assets are used to produce net income during their entire life, and therefore, full cost value is considered a sort of investment until the assets are retired from use.

(2) Depreciated Value. Those who favor the use of depreciated value for fixed assets give the following reasons:
   (a) While invested capital is conventionally understated at the present time, the wrong method of increasing it cannot be relied on to furnish the right results, and the attempt can only add to the existing confusion in accounting thinking. Cash built up via a depreciation allowance, if added to gross assets, amounts to overstating the investment.
   (b) Fixed assets are shown at net depreciated values thus avoiding duplication of asset values.
   (c) An investment is something separate and distinct from the media through which it is made. The purchase price of a machine should be regarded as the prepaid cost for the number of years of production expected. Each year this number will decline, and the decline should be offset by cash withheld from gross revenues.

> The function of depreciation accounting is to maintain the aggregate capital by currently providing substitute assets to replace the aggregate asset consumption (depreciation) of the year.
>
> (d) If fixed assets are used at cost leading to a duplication of capital to the extent of the cumulative allowance for depreciation charged against operations, the costs should, perhaps, be adjusted to exclude depreciation.[3]

Replacement value, although probably the most realistic in theory, is not used very often in return on investment calculations because it is not practical. It would be too difficult to estimate with accuracy the replacement value of all the fixed assets in a business.

The terms "income" or "savings" as used in the return on specific investment area represent either the amount of net income generated or the savings which have developed because of the investment. Included in the savings amount are items of a cash nature such as reductions in wages and maintenance expense. Noncash items like depreciation are generally excluded. The "annual cash inflow" usually consists of the savings, and the income tax effect on the savings. "Investment" as used in the specific investment concept refers to the net capital outlay required to obtain the asset. For example, if a capital outlay of $10,000 is required for a specific investment without a trade-in, then the $10,000 is considered the "investment." If an asset with a trade-in allowance of $2,000 is traded in on the new asset, then the "investment" amount would be $8,000.

ENDNOTES

[1]Stanley B. Henrici, "Eyeing the ROI," Harvard Business Review, XLVI, No. 3 (1968), p. 90.

[2]David P. McElvain, "Keying the Short-Run Capital Flow to Return-on-Investment Objectives," Management Accounting, XLIX, No. 4, Section 1 (1967), p. 3.

[3]Adolph Matz, Othel J. Curry, and George W. Frank, Cost Accounting (3rd ed.; Cincinnati, Ohio: South-Western Publishing Company, 1962), p. 848.

CHAPTER III

METHODS USED TO DETERMINE ROI

So far a concept has been discussed which, if used correctly, can provide information that is relevant to business decision making. The calculations involved in converting this concept into meaningful data are not difficult to understand. Although there are many methods available for use in the calculation, they fall into two basic categories:

1. Non-time-adjusted techniques
2. Time-adjusted techniques

Non-Time-Adjusted Techniques

The non-time-adjusted techniques are probably the oldest methods used to determine return on investment. There are many variations. The primary one is referred to as the financial-statements method. It utilizes conventional principles and practices used in accounting. That is, it uses historical dollars in its calculations assuming that a dollar today is equal to a dollar in the past or in the future. It does not take the time value of money into consideration.

This method may be used in determining return on investments in both the areas of operations and specific investments.

Since the reader is already familiar with the formula for the return on operations, it will be discussed first.

The formula as expressed in Chapter II stated:

$$\frac{\text{profit}}{\text{sales}} \times \frac{\text{sales}}{\text{capital employed}} = \text{return on investment}$$

Determining the return on investment using this formula requires little explanation as it is merely a mathematical calculation. Undoubtedly, the most difficult task involved--as discussed in Chapter II--is the determination of which "profit," "sales," and "capital employed," amounts will be taken from the financial statements.

When using the financial-statements method in the return on specific investments, it may be expressed either as a rate of return on capital, or as the amount of years required to recover the investment. The latter is commonly referred to as the payback period. Two simple formulas express these relationships:

$$\frac{\text{income or savings} \times 100}{\text{investment}} = \text{rate of return}$$

$$\frac{\text{investment}}{\text{income or savings}} = \text{payback period}$$

Advantages of using the financial-statement method are several:

1. The procedure is simple in that the calculation is a straightforward problem in long division. Further, the detailed year-by-year forecasting for the life of the investment is frequently not undertaken past the point where the project reaches its forecast normal rate of operation.
2. The method calculates directly from the figures in the same form in which they subsequently will appear in the accounts.
3. It is easy to explain.

Disadvantages of the financial-statement method are:

1. It is unreliable in comparing two or more projects with different life expectancies or different patterns of income.
2. It does not tell us the true earning power of the investment.
3. It disregards the time value of money.[1]

Time-Adjusted Techniques

Because of the disadvantages of non-time-adjusted techniques, it became necessary to develop methods which would better report return on investment. These methods are referred to as time-adjusted techniques. Again there are many variations; therefore, the most popular methods such as the discounted cash flow (DCF) and present value or present worth methods will be discussed here and a brief mention of some of the less popular methods will be made later. Also, it should be noted that the discussion of these time-adjusted techniques will relate only to return on specific investments as traditional accounting methods make it impractical to use them to determine return on operations.

The DCF and the present value method are somewhat related. Their concept is the same, but the manner of presenting the result is different. DCF results are shown in the form of percentages; whereas, present value results are reported in either the form of dollars or ratios.

The concept involved is that of finding the average rate of return on the investment. Trial and error methods enter into the calculation of the return, which "is the interest rate at which the total present worth of all inflows equals the total present worth of all outflows."[2]

Perhaps a more detailed explanation is in order at this point. In calculating the DCF a determination must be made of the annual cash inflow of the investment. A discount factor predetermined on a trial and error basis is obtained from an interest table which is set up to discount all future proceeds to the present value--in return on investment calculations this will represent future net earnings from capital investments. This table is referred to as a "present value of an annuity of $1"--see Table 1. The annual cash inflow is then multiplied times the present value of an annuity of $1 at the predetermined interest rate for the periods or life of the asset. If the product is equal to the net cash outlay, then the predetermined discount factor shows the correct rate of return on the investment. However, if the product is less than the net cash outlay, then the discount factor used is larger than the actual rate of return. Consequently a new discount factor, which is less than the first one used, is applied to the calculation. In the reverse situation, one in which the

present value of an annuity is larger than the net cash outlay, a larger discount factor would be used. This process is continued, using interpolation where necessary, until the exact discount factor is found. The expected rate of return on this project can then be compared with other projects to determine the best alternative.

In the above explanation for calculating the rate of return by the DCF method, it was assumed that the annual cash inflow was an equal amount for each of the periods involved. This may not always be the case. If the annual cash inflow does differ, then the calculation is modified as follows: After the annual cash inflows and predetermined discount factor are determined, refer to a "present value of $1" table rather than to a "present value of an annuity of $1" table. This table--see Table 2--"shows the present value of one dollar received at various times in the future, at various rates of interest."[3] Multiply the expected annual cash inflow for each period times the present value of $1 for the respective period. The sum of the products from each period is then compared to the net cash outlay in the same manner as previously described.

Advantages of the discounted-cash-flow method are:

1. It gives the true rate of return offered over the life of a project.
2. It recognizes the time value of money by making allowance for the time patterns in which investments generate their income.
3. It permits undistorted comparison of projects having different life and different patterns of return.

Its disadvantages are:

1. It requires more analysis, in making a post-audit of the project, to reconcile the figures utilized in the initial calculation if actual return figures are different.
2. It is more tedious to calculate.
3. It appears to be complex and difficult to understand.[4]

In the present value analysis a presumed rate of return, which the company has determined it should earn, is used. Utilizing this presumed rate of return the present value of the annual cash inflow of the investment is calculated in a manner similar to the DCF method. If the present worth of inflows is less than the net capital outlay, then the proposed investment is not returning the desired rate of return. This procedure will be practiced for all possible investment decisions until a proposed investment is found that will provide the desired rate of return.

The following information will be used to illustrate the techniques used and results obtained from the return on investment methods discussed above.

Dak Company is in the coal mining business. A new machine has been developed for processing coal which can save Dak $4000 per year in cash outlay expenses in the form of direct labor and repairs. This new machine is priced at $15,000; however, if Dak decides to buy it, they may trade-in their old machine, which will be fully depreciated this year, for a $5,000 allowance. The useful life of the new machine will be five years with depreciation of $3,000 per year.

The annual cash inflow is $3,000 calculated as follows:[5]

Annual operating savings before taxes	$4,000	$4,000
Less depreciation on proposed machine ($15,000 - $5,000 (trade-in value) = $10,000/5 years)	2,000	
Net increase in taxable income	$2,000	
Deduct income tax on increase in taxable income (assume federal income tax rate of 50 per cent. 50 per cent of $2,000)		1,000
Annual cash inflow		$3,000

The above data are used to illustrate the return on specific investments by the following methods: (1) the financial-statements method including both (a) rate of return, and (b) payback period; (2) the discounted cash flow method; and (3) the present value method.

The Financial-Statements Methods--Rate of Return

If Dak Company wants to determine their rate of return on the proposed investment without considering the time factor, it is done as follows:

$$\frac{\text{savings X 100}}{\text{investment}} = \frac{\$4,000}{\$10,000\ (\$15,000 - \$5,000)} = 40 \text{ per cent}$$

The Financial-Statements Method--Payback Period

This method is used to determine the length of time it will take to get the cash outlay returned to the company. With this information Dak Company can determine the project's effect on cash flow, in other words, its liquidity position. If Dak Company is in a tight cash position, the payback period will assume more importance than usual. The payback calculation is as follows:

$$\frac{\text{investment}}{\text{savings}} = \frac{\$10,000\ (\$15,000 - \$5,000)}{\$4,000} = 2.5 \text{ years}$$

The Discounted Cash Flow Method

This method attempts to determine the rate of return on the amount of capital unrecovered from one period to another rather than on the original net investment. "The rate so calculated can be looked upon as that rate which would be paid over the life of the investment if the money had been borrowed, and the cash inflow generated by the investment would repay the laon and interest in the same time span."[6]

In the previous discussion it was noted that a table giving the "present value of an annuity of $1" or the "present value of $1" is needed in this method--see Tables 1 and 2. (Note: Only small portions of the tables are presented here as these will suffice for illustrative purposes.)

TABLE 1

PRESENT VALUE OF AN ANNUITY OF $1

Future Periods	10%	12%	14%	16%
1	0.909	0.893	0.877	0.862
2	1.736	1.690	1.647	1.605
3	2.487	2.402	2.322	2.246
4	3.170	3.037	2.914	2.798
5	3.791	3.605	3.433	3.274

Source: Adolph Matz, Othel J. Curry, and George W. Frank, Cost Accounting (3rd ed.; Cincinnati, Ohio: South-Western Publishing Company, 1962), p. 842.

TABLE 2

PRESENT VALUE OF $1

Future Periods	10%	12%	14%	16%
1	0.909	0.893	0.877	0.862
2	0.826	0.797	0.769	0.743
3	0.751	0.712	0.675	0.641
4	0.683	0.636	0.592	0.552
5	0.621	0.567	0.519	0.476

Source: Ibid., p. 841.

Since in this illustration the annual cash inflow is equal for each year, Table 1 is used in the following manner to determine the rate of return by the DCF method. First, choose a discount factor from the table--assume 14 per cent. Secondly, read down this column until the fifth period is reached because the life of the new machine is five years. The amount at this point--3.433--is the present value of one dollar received annually for five years discounted at 14 per cent. The third step is to multiply 3.433 by the annual cash inflow of $3,000 which gives a result of $10,299. The last step is to compare this amount to the investment of $10,000. Since the present value of one dollar received annually for five years discounted at 14 per cent is larger than the investment, a larger discount factor should be used--try 16 per cent as follows:

Present value of an annuity of $1 at 16 per cent for five periods =	3.274
Multiply by annual cash inflow =	$3,000
Present value of an annuity of $3,000 discounted at 16 per cent for five periods =	$9,822

Since this result is less than the investment, the rate of return is known to be less than 16 per cent. In fact, based on the two calculations, it is known that the exact rate of return using the DCF method lies between 14 and 16 per cent. Now the exact rate can be determined by using interpolation as follows:

$$14\% + \left(2\% \times \frac{\$299\ (\$10,299 - \$10,000)}{\$477\ (\$10,299 - \$\ 9,822)}\right) = 14\% + (2\% \times .62683) =$$

$$14\% + 1.25366 = \underline{15.25366\%}$$

The Present Value Method

If a company knows that it must receive a certain rate of return on its investments, it may want to use the present value method.

Assume that Dak Company establishes a rate of return on a present value basis equal to 12 per cent. Referring once again to Table 1, it is determined that the present value of one dollar received annually for five years discounted at 12 per cent is equal to 3.605. This amount multiplied by the annual cash inflow of $3,000 is equal to $10,815. Since this is greater than the original proposed investment of $10,000, the investment would be returning more than the required 12 per cent. As a result, the proposed investment meets the rate of return requirements established by Dak Company.

Other Methods Used to Determine ROI

Although the above methods of calculating return on investment are the most popular, there are many other methods available. A detailed discussion of each of these is not warranted in this paper; however, the author does feel it appropriate to list some of these variations so that the reader is aware of their existence.

Under the non-time-adjusted techniques the following methods are available:[7]

1. Annual return on investment
2. Annual return on average investment
3. Average return on average investment
4. Average book return on investment.

Time-adjusted techniques include the following variations:[8]

1. Time-adjusted return on investment
2. Capital recovery method
3. Time-adjusted average annual cost.
4. Sinking fund method
5. Payout-with-interest
6. Future worth (Baldwin method)
7. Machinery and Allied Products Institute (MAPI method).

ENDNOTES

[1]Gordon B. M. Walker, "Return on Investment Concept as a Management Tool," Selected Papers 1968 (Haskins & Sells, 1969), p. 348.

[2]Gordon J. Maw, "Return on Investment: Concept and Application," An AMA Management Bulletin (Series No. 122, 1968), p. 8.

[3]Adolph Matz, Othel J. Curry, and George W. Frank, Cost Accounting (3rd ed.; Cincinnati, Ohio: South-Western Publishing Company, 1962), p. 822.

[4]Walker, op. cit., pp. 349-350.

[5]Matz, Curry, and Frank, op. cit., p. 821.

[6]Ibid., p. 822.

[7]Maw, op. cit., p. 5.

[8]Ibid., pp. 6-8.

CHAPTER IV

APPLICATION OF ROI IN DECISION MAKING

Today's business managers are continually seeking new methods to improve their company's performance. Consequently, many companies are implementing the return on investment concept to aid them in this area. This is probably due to the fact "that it translates a financial objective into terms such as selling prices, profit margins, sales turnover, production costs and capital equipment, which are easily understood by sales and production personnel."[1]

The two broad areas as discussed in Chapter II in which return on investment analysis may be applied are evaluation of the operating results, also considered management performance evaluation, and specific capital investment proposals. There are also many other areas such as product pricing, make or buy decisions, allocation of capital decisions, and bidding strategies. The latter group, however, are usually involved in some manner with the two broad areas.

Using return on investment analysis in decision making should answer two questions:

1. Given a proposed course of action requiring the outlay of money, should the company accept it?
2. Given several alternative courses of action requiring the outlay of money, which should receive preference?[2]

Some assumptions which may be made in regard to these questions are as follows:

1. Not all proposals can be accepted because the supply of money is limited.
2. Generally all proposals are of such a nature that their result can be estimated and expressed in dollars.
3. Before a decision can be made in regard to alternatives, a guide for acceptance or rejection must be established.

The last assumption may cause quite a bit of difficulty because any reasonable rate adopted by a company as a guide depends on the nature of the business, the risk of capital encountered, the investment basis, and many other factors. For example, the higher the risk, the greater the rate of return should be, and conversely, the lower the risk, the lower the expected return.

As is evident at this point, before a company can attempt to apply the return on investment concept to its decision making, it must establish a minimum standard rate of return which it will accept. There is definitely no pat answer to this problem. It requires not only managerial judgment within the company, but also, comparisons with rates of returns used by other companies.

A good source of comparative data is either the Securities and Exchange Commission or the Federal Trade Commission. These two organizations publish reports which group companies by industry indicating the industries' operating return on investment. When using these statistics in setting a standard rate of return, it should be realized that the reports consist of an average which is based on all the companies in the industry. Therefore, it is possible that the average has been lowered by some companies which have poor rates of return. This means that in setting a rate the company should strive for a rate higher than the average. It has been suggested[3] that the normal rate of return for the company's total operating performance should be between 20-35 per cent before taxes. In well protected lines involving patents the rate should be higher--between 30-40 per cent.

Comparative data can also be used as an aid in evaluating management performance by comparing the rate of return of the company with its related industry. If the comparing company is grossly under the average, management will have to attempt to determine the cause. The word management in this case does not apply only to the top executives; rather, each member of the entire management group must be on the lookout for a way that he can influence the overall return on investment. For example, "inventories could be reduced; accounts receivable could be collected more promptly; capital expenditures could be made prudently--all of which would tend to minimize the investment."[4]

In comparing a company with an industry or another company, great caution must be exercised in the area of the data used for comparison. This statement is based on the information presented in Chapter II where the makeup of the elements of the return of investment concept was discussed. If one company uses fixed assets based on original cost, and another uses fixed assets based on depreciated value, their return on investment information will not be comparable.

Besides using the return on investment concept as an external comparison, it is also of great value in analyzing internal or divisional operations. In this analysis the emphasis is on comparison with other divisions, rather than with other companies. Management's approach to this problem is somewhat similar to the external comparison problem in that they must review each division objectively and arrive at a rate of return for each division. This rate should produce, on a composite basis, the desired overall rate of return for the company. It is common for the pre-determined divisional rates of return to vary depending on the risk involved in their operations. Another factor to keep in mind is when a company is measuring its performance against its own pre-determined standards, it may change the meaning of the elements within the return on investment formula in anyway which it desires. Also, before proper divisional analysis can be made, questions similar to those dealing with external comparisons need answering. These include the valuation to be

placed on fixed assets, how to treat plant and equipment not yet in the production process, or how to handle real estate which is held for future use.

In the area of product pricing the return on investment concept can be of assistance. For example, if a desired rate of return is established, this rate along with the other elements in the formula for rate of return on operations can be inserted in the formula and then solved for sales. The sales total may be divided by the estimated number of units to be sold with a resulting price per unit. Although this is a very simplified example, it presents the idea.

As stated earlier in this paper, the turnover factor will affect the rate of return. This factor applied to product pricing means, if the price is held low, the turnover of inventory may increase. As a result, the sales will go up and the rate of profit may be the same as if the sales price had been higher and there would have been less turnover.

The basic idea of using return on investment in the allocation of capital is easy to explain. It simply means that since funds available for investment are usually limited, they should be allocated to the project which will produce the greatest rate of return.

Deciding which proposal produces the best return may not always be a simple process of elimination. Assume that two projects will both average a ten per cent rate of return per year, but that one has a fifteen-year project life and the other a twenty-year life. Now it is not clear

which proposal should be selected because it is impossible to determine what the rate of return on investments will be between the fifteenth and twentieth year. If it is felt that the rate between those years will be greater than ten per cent, then the fifteen-year project should be chosen. In a case such as this the ultimate decision will be based on the judgment of management, rather than mere return on investment calculations.

Another consideration to be made before calculating the return on investment is that all the costs for each proposed alternative must be considered. These costs do not only include the short-range costs, but also the long-range effect of the investment proposal. It is a known fact that one expenditure usually results in another. Buying a fleet of trucks may appear to produce a good return on investment if only the current costs are evaluated. Assume that six months after the purchase a new garage must be built to house the trucks. This latter cost will not result in a tangible gain and will, therefore, lower the original return on investment. Estimating all the costs is an essential factor involved in applying the return on investment concept.

In deciding upon whether to make or buy an item, the primary emphasis is usually on which decision is the least expensive. Just as in the preceding example the long-range effect must be considered. What appears to be a higher cost initially may end up producing the greater return on investment.

Although the primary uses of the return on investment concept have been discussed here, there are many other possibilities for its use. Basically, imagination and logic should be the guide in its application.

ENDNOTES

[1]Maurice S. Newman, "Return on Investment: an Analysis of the Concept," Selected Papers 1966 (Haskins & Sells, 1967), p. 345.

[2]Stanley B. Henrici, "Eyeing the ROI," Harvard Business Review, XLVI, No. 3 (1968), p. 88.

[3]Harvey O. Edson, "Setting a Standard for Your Company's Return on Investment," Selected Papers 1958 (Haskins & Sells, 1959), pp. 357-358.

[4]Newman, op. cit., p. 349.

CHAPTER V

CONCLUSION

The return on investment concept as discussed in this paper is directed primarily at business managers and how they may utilize it, rather than at business creditors or stockholders. This, however, does not preclude the use of the concept by creditors or stockholders in aiding them to achieve their goals in analyzing businesses. The basic concept for them will remain the same and only the manner of calculating the rate of return may need to be adjusted. Since this is a flexible concept, no great problem should be encountered in this area.

The objective of business is not just to exist; instead, it wants to survive and grow, not only in size, but also in quality. If the return on investment concept is applied correctly, it can be used to achieve this goal. In its application, it must be remembered that there are many ways to interpret the terminology used, and the interpretation which best fits the situation should be chosen.

When actually calculating the rate of return on investment, the method used may be either one that does not take the factor of time into consideration or one that makes an adjustment for time. Since the

purchasing power of the dollar normally changes from year to year, a time-adjusted technique should be used whenever possible. Another determinate factor involved with the technique chosen is the ultimate use of the information.

The more people in a business who are aware of the concept the better. If the top executive, plant manager, product engineer, salesman, accountant, and all the other employees have an understanding of what return on investment can mean to the company, they may be able to influence various factors so that a better return is achieved. They will learn how to apply it to overall company performance, divisional performance, specific investment proposals, product pricing, and bidding strategies, to name just a few possible applications. Also, they will learn that the return on investment concept does not just develop meaningless information, but that it is of great value in the business world. Probably the most important item to be learned when using the return on investment analysis is that it is a guide to the application of judgment, and not a substitute for it.

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