# A LABOR MARKET ANALYSIS OF EXECUTIVE EARNINGS

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## Abstract

The present study suggests a model of executive earnings based on the labor market concepts of demand and supply. On the demand side, it includes several measures of executive job complexity and employer's ability to pay. On the supply side, it includes executive characteristics such as education and experience. The empirical analysis indicates that these variables account for a significant proportion of the variance in executive earnings. The factors on the demand side, however, appear to be more important than those on the supply side. Also, contrary to the popular belief, the present study demonstrates that the factors associated with executive earnings are both identifiable and quantifiable.

# A Labor Market Analysis of Executive Earnings

Studies of executive earnings have generally emerged as by-products of the modern theory of large firms.[1] According to this theory, the present day corporation is characterized by separation of control from ownership. Its executives are less constrained to follow the owners' economic goals; they can act instead to serve their own economic self-interest. Thus they may be more inclined to maximize the size of their enterprise, partly, because "executive salaries appear to be far more closely related to the scale of operations of the firm than its profitability."[2] It was primarily to test this hypothesis that the studies of executive earnings were undertaken. Most of these studies[3] found

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[1] The theory can be traced to A.A. Berle and G.C. Means, The Modern Corporation and Private Property (New York: MacMillan & Co. 1933). For later reformations see, W.J. Baumol, Business Behaviour, Value and Growth (New York: Harcourt, Brace & World, 1967); R. Marris, The Economic Theory of "Managerial" Capitalism (New York: Macmillan & Co., 1963); and R. Monsen and A. Downs, "A Theory of Large Managerial Firms." Journal of Political Economy, Vol. 73, No. 3, (June, 1965) pp. 221-236.

[2] Baumol, Business Behaviour, Value and Growth, opp. cit., p.46.

[3] See, David R. Roberts, Executive Compensation (Illinois: Glenco, Free Press, 1959); J.W. McGuire, J.S.Y. Chiu and A.O. Elbing, "Executive Incomes, Sales and Profits," American Economic Review, Vol. 52, No. 4 (September, 1962), pp. 753-61; Marc J. Wallace, "Impact of Type of Control and Industrial Concentration on Size and Profitability in Determination of Executive Income," (Ph.D. dissertation, University of Minnesota, 1973). Also see for a dissenting view, R.T. Masson, "Executive Motivations, Earnings, and Consequent Equity Performance," Journal of Political Economy Vol. 79, No. 6 (November/December 1971), pp. 1278-1292.

a significant positive relationship between executive earnings and company size. However, they made no systematic attempt to explain this relationship and to integrate it with the established body of knowledge on wages and earnings.

Thus it is clear that the primary focus of these studies was to empirically test the alleged expansionary nature of the modern corporation rather than to explain the phenomenon of executive earnings per se. The present study attempts to fill this gap. Its focus is the chief executives of individual firms and the forces affecting their wage incomes. For this purpose, the present study develops a model of executive earnings and tests it empirically, using data from 168 life insurance companies. The model is also utilized to explain the previously found relationship between executive earnings and company size.

## A Model of Executive Earnings

Since World War II, two major but separate schools of thought pertaining to individuals wage determination have developed.[4] The first school of thought dominated during the 1950's. Focussing primarily on the demand side of labor market, it attempted to explain average individual wages via such factors as labour productivity, employers' ability to pay, product market concentration and degree of unionization.[5] In 1960's however, the focus shifted

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[4]Howard M. Wachtel and Charles Betsy, "Employment at Low Wages," The Review of Economics and Statistics, Vol. 54, No. 2 (May, 1972), pp. 121-129.

[5]See, Joseph W. Garbarino, "A Theory of Inter-Industry Wage Structure Variation," Quarterly Journal of Economics, Vol. 64, No. 2

to essentially labor supply considerations. Individual earnings were sought to be explained in terms of the human capital (education, training and experience) that the individual possesses.[6]

The present study views differentials in executive earnings as arising from both demand and supply considerations. On the demand side, two major variables are included. These are job complexity and employer's ability to pay, each operationally measured in several ways. On the supply side, it includes three measures of human capital. The conceptual relationships between executive earnings and the above variables are explained below.

Logically one might expect an executive's earnings to be related to the complexity of the job he performs in the organization. Job complexity measures the nature and magnitude of responsibility vested a job. It is essentially a structural concept relating to what the job is rather than how well it is being performed by its incumbent. Thus conceptually, job complexity is analogous to the neoclassical notion of marginal physical product of labor which is primarily technological in nature. For any given quantity of labor, the marginal physical

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(May 1950), pp. 254-281; Frederick Myers and R.L. Bowlby "The Interindustry Wage Structure and Productivity," Industrial Labour & Relations Review, Vol. 7, No. 1 (October 1953), pp. 93-102; and David G. Brown, "Expected Ability to Pay and Interindustry Wage Structure in Manufacturing" Industrial Labour & Relations Review, Vol. 16, No. 1 (October 1962), pp. 45-62.

[6] See, J. Mincer "On-the-Job Training: Costs, Returns and Some Implications," Journal of Political Economy, Vol. 70, No. 5, Part 2 (October 1962), pp. 50-79; G. Becker, Human Capital (New York: National Bureau of Economic Research), 1964. For a detailed review of these studies see J. Mincer, "Distribution of Labour Incomes: A Survey with Special Reference to the Human Capital Approach," Journal of Economic Literature, Vol. 8 (March 1970), pp. 1-26.

product depends on the amount of capital and other resources employed with it. The same unit of labor (or two completely homogeneous units) will have different marginal physical products under varying technological situations, and thus will be paid different wages. Accordingly, it can be argued that the higher the complexity of a job, the higher its importance to the organization, and consequently, the higher the wage rate that the employer would be willing to pay for it. Four operational measures of executive job complexity are employed in the present study. These are: the number of persons directly supervised (span of control); the number of functional divisions directly supervised (functional divisions); the number of management levels below the executive (management levels); and the number of states in which the organization operates for business (geographical diversity).

The level of executive earnings depends not only on what the job is but also on the employer's ability to pay. The imperfect nature of the executive labor market[7] necessitates that employers pay competitive wages to attract and retain executives. To what extent an employer will be able to do so depends upon his ability to pay. Thus, it can be hypothesized that, other things being equal, the greater the employer's ability to pay, the higher the level of executive earnings. The present study employs two measures of employer's ability to pay. These are: total profit,

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[7] Roberts found the executive labor market to be characterized by relative shortages and limited mobility. See David R. Roberts, Executive Compensation, opp. cit.

defined as the net operating gain before taxes and dividends; and rate of return defined as the ratio of total profit to assets.

Finally, the level of executive earnings will also vary directly with the executive ability. A more able executive is likely to be more productive and thus command a higher price in the market. The present study measures executive ability in terms of three human capital variables. These are: education level (below high school, bachelor's degree, and master's degree or higher); field of study (business or non business); and total work experience.

Figure 1 summarizes the model of executive earnings outlined above. It also provides an explanation of the empirical relationship between executive earnings and company size found in several previous studies. Specifically, it suggests that company size is closely related to the two demand oriented factors, executive job complexity and employer's ability to pay. It is reasonable to expect executive job complexity to increase with company size. A large organization tends to subdivide its processes along functional, vertical and spatial dimensions. Such subdivision enables the organization to reap the benefits of greater division of labor. But at the same time, it also makes it more difficult for executives to control and coordinate all the various phases of production.[8] Thus larger organizations tend to be more com-

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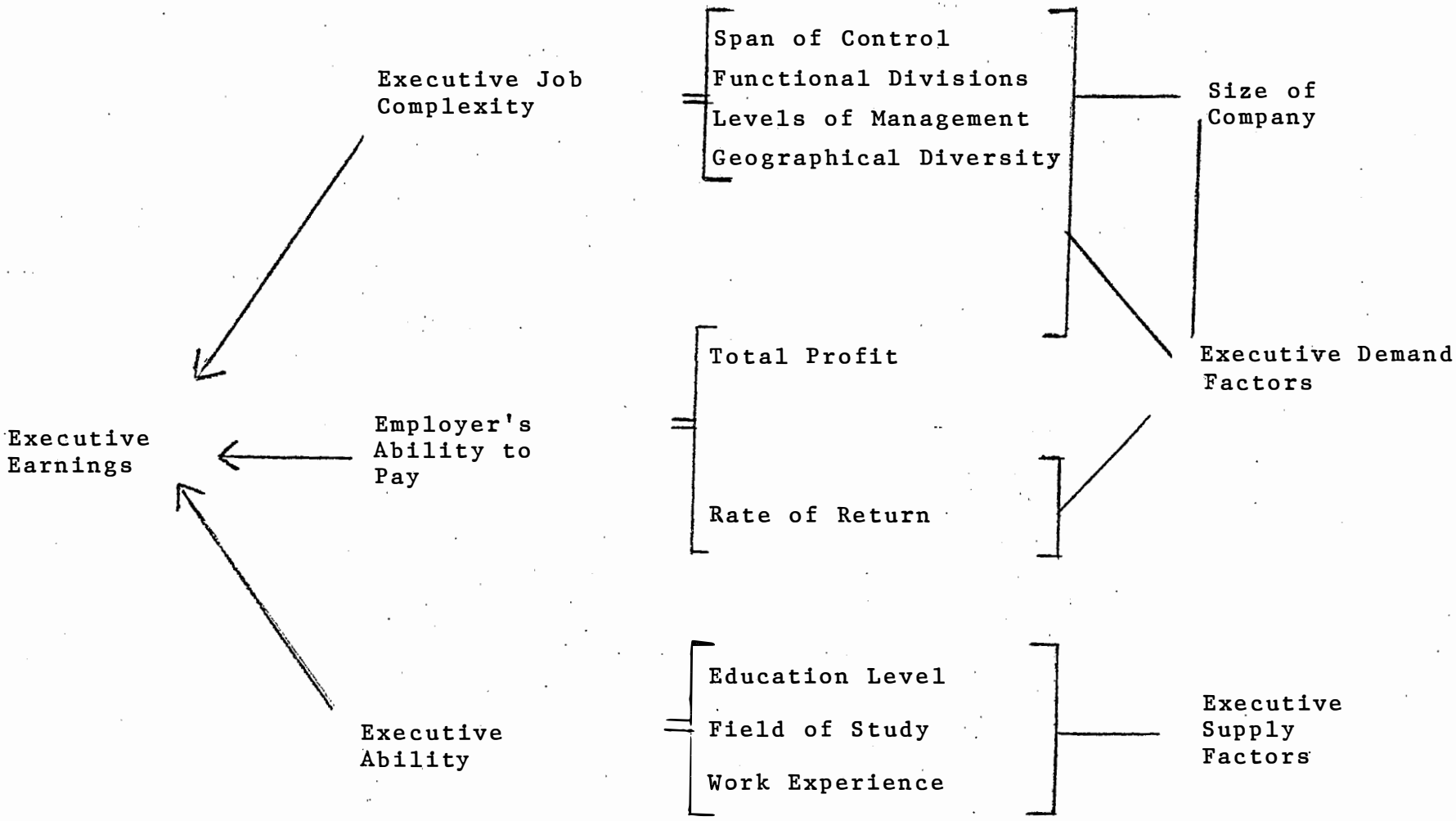
[8] See, Stanley H. Masters, "An Interindustry Analysis of Wages and Plant Size," The Review of Economics and Statistics, Vol. 51, No. 3 (August 1969) pp. 341-345 and Peter M. Blau, "A Formal Theory of Differentiation in Organizations," American Journal of Sociology, Vol. 35, No. 2 (April 1970), pp. 201-218.

## Figure 1

## A Model of Executive Earnings



plex which in turn renders their executive jobs more complex. The relationship between company size and its ability to pay depends upon how the latter is measured. While the total profits are generally higher in larger organizations, the rate of return (profitability) need not be so.[9] Thus, the above reasoning suggests that company size simply serves as a composite proxy measure of executive job complexity and employer's ability to pay.

Two specific hypotheses can be derived from the preceding analysis. The primary hypothesis is that executive job complexity, employer's ability to pay, and executive ability collectively and individually, explain a significant proportion of variance in executive earnings. The present study also provides a tentative explanation of the previously found empirical relationship between executive earnings and company size. Thus, the second hypothesis is that company size is significantly and positively related to executive job complexity and employer's ability to pay. Alternatively, it means that company size will not add to the variance in executive earnings already accounted for by executive job complexity and employer's ability to pay.

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[9] No significant and consistent relationship has been found between company size and profitability. See, J.L. Eatwell, "Growth, Profitability and Size: The Empirical Evidence" and R. Marris, "Some New Results on Growth and Profitability" both in Robin Marris and Adrian Wood, eds., The Corporate Economy: Growth, Competition and Innovative Potential (Cambridge, Massachusetts, Harvard University Press, 1971).

## Empirical Analysis and Results

The empirical analysis in this section is based on data on chief executives of 168 U.S. life insurance companies. The data were collected for the year 1973 using a pretested mailed questionnaire. The life insurance industry is a highly regulated industry. The companies in the industry are required to submit detailed reports on their operations (including information on top executive earnings, company size and profits) to the relevant government department of each state in which they are licensed for business. Thus, the data furnished directly by the companies for this study were verified, to the extent possible, from the available government records and other published sources.[10]

Executive earnings are defined in the present study to include only the direct cash payments ie. salary plus bonus. Most previous studies have also used the same definition. Executives do additionally receive a large variety of deferred payments such as stock options, pensions and the like. But the process of computing the present income equivalent of such payments is very complicated and prone to errors. One study[11] did employ two measures of executive earnings: salary plus bonus, and salary plus bonus plus the present value of deferred payments. However, when both

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[10] Also used for this purpose was the BEST's Review, Life Edition, published annually by the A.M. Best Company, Morristown, New Jersey.

[11] W. Lewellen and Blain Huntsman, "Managerial Pay and Corporate Performance," American Economic Review, Vol. 60, No. 4 (September, 1970) pp. 710-720.

these measures were regressed separately on a common set of independent variables, no significant differences were found. This indicates that the two measures of executive earnings are highly correlated and perhaps are differentiated only by a scale factor.

The technique of multiple regression analysis was used to estimate the relationship between earnings and the various independent variables. The results, shown in Table 1, clearly support the first hypothesis. Collectively, the independent variables account for about 80 percent of the variance in executive earnings. Individually also, the independent variables appear as significant determinants of executive earnings. The beta coefficients of three of the four job complexity measures, viz. span of control, management levels and geographical diversity are statistically significant. Thus, as the jobs become more complex, the organizations pay higher compensation to the executives holding these jobs.

Executive earnings also appear to be significantly related to the employer's ability to pay measured by total profit. Infact, the beta coefficient of total profit is the highest, indicating its critical importance as a determinant of executive earnings. However, the beta coefficient on the other ability to pay measure, rate of return, is not significant and also negative. While its lack of significance is consistent with the findings of several previous studies,[12] its negative direction is not.

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[12] Roberts. Executive Compensation, opp. cit; and McGuire, Chiu and Elbing "Executive Incomes, Sales and Profits," opp. cit.

Perhaps, this might have resulted from the fact that rate of return in the present study was computed as profit per unit of assets rather than as profit per unit of net worth. The latter measure could not be used due to nonavailability of data.

Among the executive ability variables, work experience is most significantly related to executive earnings. The experience variable was used in three different forms in the regression analysis. In its most aggregated form, the results for which are shown in Table 1, the experience variable attains a significant beta weight. When differentiated as experience within and outside the company, only the former is significant. When the experience within the company is further differentiated as experience before and after becoming the chief executive, it is the latter which is more significant.[13] Thus, the specific job experience is more relevant and a better predictor of executive earnings than the general experience.

The relationship between executive earnings and education level is positive but not significant. Two points are worth noting in this regard. First, the empirical analysis in the present study is based on a select sample of chief executives. Such a sample is likely to display a much less variability in education level than aggregative cross section samples of labor force.

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[13]The other results of these regression exercises are almost identical to those in Table I and hence omitted from presentation here.

Table I

Results of Multiple Regression Analysis

(N=168)

| Independent Variables | Beta | F Value |
|---|---|---|
| **Executive Job Complexity** | | |
| Span of Control | .089 | 5.20* |
| Functional Divisions | .056 | 1.89 |
| Management Levels | .376 | 67.95** |
| Geographical Diversity | .188 | 18.86* |
| **Employer's Ability to Pay** | | |
| Profit[1] | .479 | 139.90** |
| Rate of Return | -.021 | 0.32 |
| **Executive Ability** | | |
| Education Level[2] | .034 | 0.47 |
| Field of Study:[3] | | |
| Business | .020 | 0.07 |
| Non-Business | -.005 | 0.01 |
| Total Work Experience | .081 | 4.74* |
| R | .892 | 61.42** |
| $R^2$ | .796 | |

1. Measured in hundred dollar units.

2. Measured as 1 = less than high school, 2 = high school, 3 = bachelor's degree and 4 = master's degree or higher.

3. Introduced as a dummy variable in the regression equation.

* Significant at the five percent level.

** Significant at the one percent level.

For example, 90 percent of the respondents in the present sample have a Bachelor's degree or higher and only 10 percent have a high school degree or less. Second, the simple correlation coefficient between education level and executive earnings is .238 which is statistically significant at the 5 percent level. It is only when education level is combined with the variables on the demand side in the multiple regression analysis that it loses its significance.

Finally, the regression coefficient of field of study: business vs. non business is also insignificant. This may have resulted from the particular measure employed in the present study. Perhaps, a more appropriate measure in the context of life insurance industry would have been actuarial vs. non-actuarial degrees.

To summarize, the empirical analysis up to this point clearly supports the major hypothesis of the present study. The level of executive earnings is significantly related to job complexity (measured by span of control, management levels and geographical diversity), employer's ability to pay (measured by profit) executive ability (measured by experience). Collectively these variables account for about 80 percent of the variance in executive earnings in the present sample.

The second hypothesis concerns the relationship between executive earnings and company size and its explanation within the conceptual framework of the present study. As noted earlier, several previous studies have found executive earnings to be significantly related to company size. In the present study also, the correlation coefficient between the two is .784 which is

statistically significant beyond the one percent level.[14] According to the model of executive earnings presented earlier, this finding can be explained in terms of the relationship between company size and the two explanatory variables: job complexity and employer's ability to pay (total profit). Specifically, company size can be viewed as a composite proxy measure of these two variables. If so, then it can be hypothesized that company size would fail to add significantly to the variance already accounted for by job complexity and total profit.

The above hypothesis is tested in two ways. First, Table 2 presents the correlation coefficients between company size and each of the four job complexity measures and total profit. As is clear, all correlation coefficients are statistically significant. Second, a stepwise regression analysis was undertaken to test the above hypothesis more directly. At the first step, executive earnings were regressed on the four job complexity measures and total profit. The proportion of variance ($R^2$) in executive earnings accounted for by these variables was .789. At the second step, company size was added as an independent variable. The resulting increment in $R^2$ was only .027, thus clearly supporting the hypothesis in question. An additional stepwise regression was run with the order of independent variables reversed. At the first step, only company size was used as an independent

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[14] Data on three measures of size were collected from the life insurance companies: assets, number of employees, and sales volume measured by total premium income. Intercorrelations among these measures were very high, the r's ranging between .88 and .97. Thus, the results using only one measure are presented here. To retain comparability with previous studies, the measure selected is sales volume.

variable. The $R^2$ in this case was .616. When the job complexity measures and total profit were added, the $R^2$ increased by .200. Thus, job complexity and total profit not only capture the variance accounted for by company size but also make a significant additional contribution.

## Summary and Conclusions

The present study proposes a model of executive earnings based on the labor market concepts of demand and supply. The model comprises three basic determinants of executive earnings. These are: executive job complexity, employer's ability to pay, and executive ability. The first two variables are included to represent the firm's demand function for executive services. Executive ability measured by education and experience is included to represent the executive supply forces. The empirical analyses in the present study point to the following conclusions.

First, the three independent factors collectively explain a significant proportion of variance in executive earnings. Individually also, they are significantly related to executive earnings. Their relative significance, however, differs. The variables on the demand side appear to be more important determinants of executive earnings than those on the supply side. This perhaps reflects a relative shortage of executive supply forcing employers into comepetitive bidding. Executive characteristics such as education and experience may cause initial variance in the minimum supply price. But ultimately, the magnitude of such variance is significantly modified and expanded by the competitive actions of

the employers.

Second, the results also indicate differing importance of education and experience as predictors of executive earnings. Total experience appears to be a better predictor than education. And within total experience, specific (within company) experience is a better predictor than general (outside company) experience. Perhaps, formal education and previous experience serve more to influence a person's chances of entering an executive job. But once at this job, his earnings are influenced more by how long he has been in that job.

Finally, the empirical analysis in the present study also explains why executive earnings may be significantly related to company size. The results in this regard indicate that company size is closely related to the explanatory variables on the demand side. These are executive job complexity and employer's ability to pay. Both these variables succeed in capturing (and adding to) the variance in executive earnings accounted for by company size.

A number of factors should be kept in mind in interpreting the above results. The study was restricted to executives from the life insurance industry. The relationships relevant to compensation determination for this group may not hold for executives from other industries. Also, the operational measures of several variables could be improved upon. For example, a more complete measure of executive compensation should include fringe benefits and deferred payments. Similarly, a better measurement of both the quantity and quality of education may be fruitfully employed.

Despite these limitations, the findings of the present study

Table 2

Simple Correlation Coefficients Between Company Size and Job Complexity and Ability to Pay Variables

(N=168)

| | Correlation Coefficient |
|---|---|
| Job Complexity | |
| Span of Control | .142* |
| Functional Divisions | .235** |
| Management Levels | .529** |
| Geographical Diversity | .256** |
| Employer's Ability to Pay | |
| Total Profit | .896** |

*Significant at the five percent level.

**Significant at the one percent level.

have an important implication for executive salary determination. Traditionally, executive jobs are regarded as unique because of the difficulty of separating the man and the job. The job contributions of executives are assumed to represent an identity between the individual and the organization. Organizations generally permit their top executives almost complete freedom in designing their own jobs. By implication, then, such jobs are considered to be less amenable to systematic study and comparison of their relative worth. Consequently, the process of salary determination of executive jobs tends to be highly subjective and implicit. The findings of the present study are important to management for they demonstrate that factors associated with executive compensation are both identifiable and quantifiable. Factors relating to the job and the job incumbent are highly predictive of current compensation levels.

Considering the critical role of executives in managing organizations, further studies like the present one are needed to provide information on how their compensation is currently determined. Obviously, such studies cannot help decide whether or not the factors currently used are the ones that ought to be used. Nevertheless, the knowledge and understanding of current practice are prerequisites for future improvements.

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