The presence of variable cost data in an LP problem and clarity of the primal-dual presentation

By Dr. Jaime O. Umali, Associate Professor, Business Management Department

This paper seeks to demonstrate the effects of the availability of variable cost data on the range of inferences concerning the Primal-Dual relationships in linear programming (LP). Richer insights should lead to a clearer reconciliation of the two approaches.

Background

The reasons for concern with this topic include those that are related to the type of textbooks available, motivation of students, and differences in the orientation of faculty members.

Typical textbook exercises omit data on variable costs. It is possible that writers assume that readers can perform their own reconciliation of the Primal-Dual optimal solutions: optimal profit, quantities, and shadow prices in the Primal; with the optimal cost and prices in the Dual.

In the experience of the author, students seldom have the capability or the motivation to see beyond the standard computational results. Because of differences in orientations (either business or mathematics), it is possible, too, that faculty members handling the course may emphasize the number-crunching aspect of the model, at the expense of the practical business interpretation of the results. Unless properly structured, the results of the problem exercises can lead to either incomplete analyses, or apparently inconsistent results between the Primal and the Dual.

Hakayawa (1972) examined the various levels of meaning, including both intentional and extentional. Intentional meaning may or may not have an extensional equivalent (e.g. a square circle); while extensional meanings point to specific examples. In this sense, this paper calls attention to the apparent inconsistencies that are created by an incomplete Primal-Dual presentation.

Purpose and Rationale

The purpose of this paper is to compare the typical textbook presentation of an LP situation, show its limited capability to reconcile the results of the Primal and Dual optimal solutions, and to present an alternative method of presentation. Because of limited data built into the LP exercises it is expected that the Primal and Dual optimal solutions will fail to reconcile the meaning of the optimal values of Zij. For the same reason, such exercise will not clarify the meaning of shadow prices in the Primal, in relation with the prices in the Dual.

In this study, the author submits that by adding more specifics to examples, potential ‘square-circles’ may be minimized.

Methodology

The methodology consists of two parts. The first part includes selecting an illustrative textbook problem, setting up and generating both the Primal and Dual optimal solutions, showing the limitations in reconciling the results of the Primal and Dual processing. This presentation is labeled as textbook presentation.

The second part presents an alternative method that capitalizes on additional data, and demonstrates how the unanswered questions in the textbook approaches are resolved. For this purpose the paper selected a typical exercise (Problem 9, Chapter 8 from Levin et al. 1992). The problem is repeated below:

The Westmoreland Company produces two brands of rabbit food called Diet-Sup and Gro-More. Contribution from Diet-Sup is $1.50 per 7-pound bag while Gro-More yields a contribution of $1.10 per 3-pound bag. Both products are blended from two basic ingredients—a protein source and a carbohydrate source. The products require the following ingredients:

<table>
<thead>
<tr>
<th></th>
<th>Protein</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet-Sup (7-pound bag)</td>
<td>4 lbs.</td>
<td>3 lbs.</td>
</tr>
<tr>
<td>Gro-More (3-pound bag)</td>
<td>2 lbs.</td>
<td>1 lb.</td>
</tr>
</tbody>
</table>

During the coming week, the company wishes to produce the largest profit possible in order to help alleviate a serious shortage of cash for the week. Only 700 lbs of protein source and 500 lbs of carbohydrate source are available. How many bags of each of the two brands should be produced to maximize profit?

In the alternative presentation, the following data are added:

Westmoreland had acquired the raw materials at the cost of $2 per pound of protein, and $1 per pound of carbohydrates.

Both the textbook and proposed approaches utilize the same primal and dual formulations presented in the next section. The reader may recall that the Primal takes the view that Westmoreland shall be selling finished goods; while the Dual presumes that the company will sell its raw materials to a willing buyer, instead.
A. The Primal Formulation

The primal formulation is as follows:

Let  \( x_1 = \text{no. of bags of Diet Sup} \)
\( x_2 = \text{no. of bags of Gro-More} \)

The Objective function is:

\[ \text{Max } Z_1 = 1.50 x_1 + 1.10 x_2 \]

The Constraints are:
1. \( 4x_1 + 2x_2 < 700 \text{ lbs. Protein} \)
2. \( 3x_1 + 1x_2 < 500 \text{ lbs. Carbohydrates} \)

B. The Dual Formulation

The dual formulation is as follows:

Let  \( x_1 = \text{unit selling price of proteins} \)
\( x_2 = \text{unit selling price of carbohydrates} \)

The Objective function is:

\[ \text{Min } Z_2 = 700 x_1 + 500 x_2 \]

The constraints are:
1. \( 4x_1 + 3x_2 > 1.50, \text{ profit from Diet-Sup} \)
2. \( 2x_1 + 1x_2 > 1.10, \text{ profit from Gro-More} \)

Results and Discussion

The following discussions refer to the optimal results of the Primal (See Table 1 on page 3) and the Dual (See Table 2 on page 3).

A. Textbook Presentation

A usual presentation of the Primal solution begins with a recitation of her optimal profit \( Z \) (Table 1) of $385, and the optimal mix consisting of 350 bags of Gro-More and 0 bags of Diet-Sup, and an excess of 150 pounds of carbohydrates.

This is followed by an obligatory reading of the results of the Dual solution (Table 2): optimal cost \( Z \) of $385, price per pound of protein of $0.55; and price per pound of carbohydrates of $0.

The average student is almost always at a loss as to how the Primal and Dual are supposed to represent two sides of the same problem. Does it mean that the buyer of proteins and carbohydrates will pay Wesmoreland $0.55 and $0 (no cost) per pound, respectively? How can Wesmoreland still generate a profit of $385, if the optimal cost (Table 2) to the buyer of raw materials is only $385? Clearly, these apparent dilemmas, while a welcome challenge to the curious, may be frustrating to those who are not quantitatively inclined. An alternative presentation is presented in the next section.

B. An Alternative Presentation

Given the additional data on variable cost, the inferences, interpretations, derivations of cost, and estimation of profit proceed as follows:

Westmoreland as seller of finished goods

The products' selling prices may be inferred from the familiar equation:

Selling price = variable cost + contribution

Since variable cost can be determined, and the unit contributions have been provided, the selling prices may be computed.

Selling price of Diet-Sup

<table>
<thead>
<tr>
<th>4 lbs. protein x $2 per pound</th>
<th>$ 8.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 lbs. carbohydrates x $1 per pound</td>
<td>$ 2.00</td>
</tr>
</tbody>
</table>

Total variable cost + Contribution = $11.50

Selling price of Gro-More

<table>
<thead>
<tr>
<th>2 lbs. protein x $2 per pound</th>
<th>$ 4.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 lb. carbohydrates x $1 per pound</td>
<td>$ 1.00</td>
</tr>
</tbody>
</table>

Total variable cost + Contribution = $6.10

As seller of finished goods, Westmoreland will gain a profit of:

\[ Z \text{ or profit} \quad \text{Total Sales - Total variable Cost} \]

\[ ([6.10 \times 350] + [11.50 \times 0]) - [700 \times 2.00 + 950 \times 1.00] \]

\[ $385 \]

For Westmoreland to be indifferent to the alternative of selling its raw materials, it should be able to recover the optimal profit of $385 as seller of finished goods. This in turn depends on the prices to be paid to the company by the buyer of raw materials.

The prices to be paid by the buyer of raw materials are determined as follows:

Price = Original acquisition cost by Westmoreland + optimal price from the Dual

For proteins,
Price = $2 + $0.550 = $2.55

For carbohydrates,
Price = $1 + 0 = $1.00

Proceeds from Westmoreland's sale of raw materials
From proteins, \( 2.55 \times 700 = \$1785 \)
From carbohydrates, \( 1.00 \times 500 = \$500 \)
Total proceeds = $2285

Cost of raw materials acquired by Westmoreland
Proteins, \( 2 \times 700 = \$1400 \)
Carbohydrates \( 1 \times 500 = \$500 \)
Total cost = $1900
Students seldom have the capability or the motivation to see beyond the standard computational results. Unless properly structured, the results of the problem exercises can lead to either incomplete analyses, or apparently inconsistent results between the Primal and the Dual.

Thus, total profit derived by Westmoreland from sale of raw materials is:

\[
\text{Profit} = \text{Total sales} - \text{Total costs} = \$2,285 - \$1,900 = \$385
\]

Conclusion and Recommendations

The proposed presentation strengthens the explanation of the links between the Primal and the Dual by providing a more complete picture of the selling prices of finished goods and the acquisition cost of the raw materials. By building variable cost into the exercise, the alternative approach is able to reconcile the optimal Z’s of both the primal and dual solutions; more fully interpret the information generated from the final tableaux, while remaining consistent with the meaning of profit and prices. It is clear from the foregoing comparison that the absence of variable costs can set a limit on the teacher’s efforts to reconcile the Primal with the Dual.

Finally, Juran (1988) recognizes that workers (teachers in this context) compile their own “knacks” to facilitate their work. Hopefully, this brief note may be a useful addition.

References


Budgeting

Implementing Planning and Control

By Perfecto M. Perez, Chairperson, Financial Management Department

Planning is one of the most important functions of management. Such function can be effective only when properly monitored and controlled within a well-defined framework. A method by which management can plan for the future in a way that enables it to control its operations is best done by budgeting.

A budget is a quantitative expression of a plan of action and is an aid in coordinating and implementing such plan. It shows how resources are to be acquired and used over a specified time interval.

Budgeting is widely used management tool that facilitates utilization of the vast amounts of information available at the present. Budgeting spells out management plans in quantitative terms; it is also used to evaluate such plans.

Budgeting performs two vital management functions:
(1) it is a comprehensive plan of action;
(2) it compares actual results with the predetermined plan. Thus, planning and control are essential features of the budgeting process.

Uses of the Budget

1. Planning: As an aid in making and coordinating short range plans

Although major planning decisions are usually made in the programming process, formulating the budget leads to a refinement of these plans. In preparing the budget, managers must consider how conditions in the future might change and what steps they should take to prepare for these changes.

Furthermore, each responsibility center affects the work of other responsibility centers. The budgetary process helps coordinate these separate activities to ensure that all parts of the organization are in balance with one another.

2. Communication: As a device for communicating these plans to the various responsibility center managers

Management’s plans will not be carried out unless the organization understands what the plans are. These include such specific things as how many good and services are to be purchased; and what selling prices are to be. The organization also needs to aware of policies and constraints to which it is expected to adhere.

Examples of these kinds of information include the maximum amounts that may be spent for advertising, maintenance, and administrative costs; wage rates and hours of work; and desired quality levels. A most useful device for communicating quantitative information concerning these plans and limitations is the approved budget.

3. Motivation: As a way of motivating managers to achieve their responsibility centers’ goal

The budget process can also be a powerful force in motivating managers to work toward the goals of their responsibility centers, and thereby the goals of the overall organization. Motivation is greatest when these managers have played an active role in the formulation of their budget.

4. Controlling: As a benchmark for controlling ongoing activities

A carefully prepared budget is the best possible standard against which to compare actual performance. A comparison of actual performance with budgeted performance provides a “red flag,” i.e., it directs attention to areas where action may be needed. An analysis of the variance between actual and budgeted results may: (1) help identify a problem area that needs attention; (2) reveal an opportunity, not predicted in the budgeting process, that should be capitalized upon; and (3) reveal that the original budget was unrealistic in some way.

5. Evaluation: As a basis for evaluating the performance of responsibility centers and their managers

Monthly variances from budgets are used for control purposes during the year. The comparison of actual and budgeted results for the entire year is frequently a major factor in the year-end evaluation of each responsibility center and its manager. In some companies, a manager is awarded a bonus that is calculated using some predetermined percentage of the net favorable variance in his or her responsibility center.

The Master Budget

A master budget quantifies the objectives and expectations of all subunits of an organization. It is complete blueprints of the operations of the firm for the period, which warrants a comprehensive view of the projected operations of the company and change to review and adjust them before putting the budget into effect.

Usually the master budget is divided into two major classifications: (1) the operating budget; and (2) the financial budget. These major classifications are further classified into several budgets supported by many subsidiary budgets and/or schedules. In practice, the classifications and pro-form of the various budgets are dependent upon the nature of the business and the individual preferences.

Operating Budget. The operating budget focuses on the income statement and its supporting schedules. Some call the operating budget the profit plan. An operating budget generally consists of:
(1) Sales Budget
(2) Production Budgets:
   (a) Production volume budget
   (b) Direct materials requirements budget
(3) Manufacturing cost budgets:
   (a) Direct materials cost budget
   (b) Direct labor cost budget
   (c) Factory overhead cost budget
(4) Cost of goods sold budget
(5) Selling and administrative expenses budget
(6) Budgeted Income Statement

The above budgets for production and manufacturing costs are applicable only to manufacturing concerns. The same budgets are replaced by a “purchase budget” when dealing with merchandising concerns.

Financial Budget. The financial budget focuses on the effect the operating budget and other plans (such as capital expenditures and repayments of debt) will have on cash. The financial budget consists of:
(1) Cash budget
(2) Capital expenditures budget
(3) Budgeted Balance Sheet
(4) Budgeted Statement of Cash Flows
ing cash receipts would generally reveal the fact that most sales do not result in immediate cash receipt. Credit terms, trade discounts, allowance of bad debts, and economic conditions, are some of the many factors that may affect collection.

Usually, cash receipts are estimated based on past experience. Timing of collections is spread over several months after the consummation of sales. For each of these months, a certain percentage of the sales made in the previous months are collected, thus monthly sales transactions.

Others merely estimate the ending accounts receivable for the period. Collections estimates are made by adding the beginning accounts receivable and budgeted sales for the period, and then, deducting the estimated ending accounts receivable.

In addition to receipts from sales, other sources of income such as interests, dividends, rents, royalties, proceeds form sale of assets, and others, must also be taken into consideration.

Forecasting Cash Disbursements. Related to operating budgets is forecasting cash disbursements. In translating operating budgets into cash disbursements, time lags should be considered. Payments for material purchases would depend upon the intention of management to stick to the terms provided by the supplier. Such terms can be used as the basis for determining cash disbursements for materials purchased. Other costs and expenses items may not have the same time lags compared with materials: time lags for these costs and expenses items may be slight, but nevertheless should be considered in estimating cash disbursements.

Also, forecasting cash disbursements requires the determination of cash requirements for capital expenditures, debt retirements and financing charges, as well as income tax liability.

2. Capital Expenditure Budget.

An important decision that management makes is the proper distribution of funds among different capital investment projects. The project may be acquisition of plant assets, the construction or purchase of a new building, the addition of a new product, or some other project that would require long-range planning because it would involve fairly substantial amounts.

Capital budgeting involves the planning and appraisal of the monetary long-range benefits of expenditures for assets, the returns from which will be realizable in future periods. Four major approaches are currently used to make the best capital investment decisions. In all the approaches, however, the main aim is to pick the alternative which provides the greater benefits at the least cost of getting such benefits. The four major approaches are as follows:

1. Payoff or payback period method;
2. Return on investment (ROI); discounted cash flow method; and
4. Present value method


Projecting the effects of the transactions shows in the various budgets of the projected balance sheet for the close of preceding period is manifested by a budgeted balance sheet for the budget period.


The source of the budgeted resources and its corresponding disposal can be clearly presented in great detail in a budgeted statement of cash flow classifying the funds sources and uses into operating, investing and financing activities.

Fixed and flexible budgets

A fixed budget is a budget based on one's level of activities. An example of a fixed budget is an operating budget from the master budget plan.

More often than not, sales forecasts are subjected to revisions. Completely predictable situations exist only in a very few cases. Using a fixed budget in a radically changing business condition causes the actual manufacturing overhead costs at one production level with budgeted manufacturing overhead costs at another production level.

To expect business activities to conform to a fixed preconceived pattern is futile. It is more relevant to anticipate cost at the various levels of activities for after all, business is dy-
A. Operating Budget

1. Sales Budget.
   The sales budget is the starting point for budgeting, because inventory levels, purchases, and operating expenses are generally geared to the rate of sales activity. Thus, a sales plan must be made early in the budget process, for it affects most of the other plans.

   One of the most important aspects of budgeting is a realistic sales forecast. Generally, past sales and present market conditions are initially considered in the forecast. Also, external and internal factors may influence forecasting and, therefore, may be brought together into a workable sales budget:

   - **External factors** include the following: industry trend, political environment, national economic condition, purchasing power of peso, population growth and shifting habits, modes of living, and changes in buying habit.

   - **Internal factors** include sales trends, production capacity, introduction capacity, introduction of new products, projected plant expansion, seasonal variations of products, estimate of sales people, and sales territories.

   Sales forecasting is usually the responsibility of the sales department. The sales manager, assisted by individual sales people and market research personnel, is primarily responsible for the preparation of the sales estimate.

   - Basically, there are two ways of making sales estimates as a basis for the sales budget:

     - **Make a statistical forecast** on the basis of a mathematical analysis (e.g., regression analysis, input-output analysis, etc.) of general business conditions, market conditions, product growth curves, and the like.

     - **Make a judgmental estimate** by collecting the opinions of executives and sales personnel are asked to estimate the sales of each product to each of their customers; in others, regional managers estimated total sales in their regions.

2. Production Budget.
   After the sales estimates, production planning must be made. Production planning is an activity which cannot be done without considering the sales plan. On the other hand, sales planning must be coordinated with a production plan in terms of capacity constraint. It is very much possible that a certain sales forecast exceeds the production capacity. In such a situation, decision whether to slash the sales forecast in such a way that present capacity can cope with it or to expand the present production capacity so as to serve the demand as forecaster, are serious considerations that must be decided by the management in coordination with the budget committee.

   **Production Volume Budget.** A production volume budget is necessary when the product requires two more types of raw materials. It determines the volume of finished goods inventories that is necessary for a given sales estimate and desired ending inventories prior to the estimate of the equivalent raw materials requirements. Usually, the budget is prepared with quantities only. The desired ending finished goods inventories and the estimated sales in units will provide the total finished goods inventories requirements of the period. Beginning finished goods inventories (which are on hand), when deducted from the total requirements, will result to the total number of units that must be produced during the period.

   **Direct Materials Requirements Budget.** The direct materials requirements budget determines the quantity of raw materials that is needed in production, as well as in the programming and control of its purchases. In presenting the budget, the desired ending raw materials inventories are considered in the same manner as the desired ending finished goods are treated in the production volume budget. The desired ending raw materials inventories plus the total raw materials requirements for the estimated volume of production will provide the total raw materials inventory requirements for the period. When the beginning raw materials inventories are deducted from the total number of units of raw materials that should be purchased for the period. Combining the quantities and prices of the raw materials gives the estimated raw materials cost.

   While production budgets translate sales forecasts into physical units, the manufacturing cost budgets provide the estimated cost of materials, labor, and factory overhead essential to the sales and production program.

   **Direct Material Cost Budget.** This budget provides the cost for the total direct materials requirements.

   **Direct Labor Cost Budget.** The direct labor cost budget is the translation of physical production quotas into labor cost requirements.

   **Factory Overhead Cost Budget.** This budget is prepared on the basis of the chart of accounts. Various cost centers participate in the preparations of the overhead budget by initially preparing one for their own. The highlight the value and importance of budgetary control, the unusual natural classifications of the factory overhead cost are further classified into controllable and noncontrollable costs at the cost center level.

4. Cost of Goods Sold Budget
   The preparation of the cost of goods sold budget is dependent upon the inventory methods and valuation used [e.g., first in-first out (FIFO), last in-first out (LIFO), average, etc.]

5. Selling and Administrative Expenses Budget
   Like an overhead budget, the selling and administrative expenses budget is prepared on the basis of a chart of accounts which provides for the natural classification of expenses. Other considerations like the controllability, variability, and functions in classifying expenses may be instituted at the cost center level, as well as for the overall summary of the selling and administrative expenses budget, whenever applicable.

6. Budgeted Income Statement
   The highlight of the operating budget is the presentation of the budgeted income statement. The budget provides an overall plan of operation for a given period of time, and helps subsequent implementation of the built-in control processes for costs and expenses.

   The budgeted income statement tests the plan of operations as represented by the various operating budgets earlier presented, and represents the transactions projected for the budget period.

B. Financial Budget
   The financial budget is used for the proper allocation of business resources for a given operating budgetary program. The basic functions of a financial budget are:

   - To estimate both short-term and long-term capital requirements;
   - To ascertain how much resources are available;
   - To determine other sources of capital requirements when further needed: and
   - To coordinate financial planning with operating plans.

   When capital expenditures are partly or wholly financed by a loan, a debt-financing budget may be incorporated with the capital expenditures budget for debt-financing. It must be understood that capital expenditures and debt financing affect operating and financial budgets as earlier mentioned.

1. Cash Budget
   The estimated cash receipts and disbursements for the budget period are all incorporated in a cash budget. The cash budget shows the availability of idle cash for investment or the efficiency in cash requiring additional funding.

   **Forecasting Cash Receipts.** Forecast.
Abstracts...
from page 8

Demand and very large losses during periods of lean demand. Such price control mechanism which was lifted by the Government in 1992, was therefore identified as the main reason behind the cement shortage that occurred from 1987 to 1990.

The study found that, in the light of the forthcoming ASEAN Free Trade Agreement (AFTA), it is imperative that the Government do something about the high interest rates, high fuel prices, and high power costs to make the cement industry competitive not only regionally but also globally. The proponent offered a number of recommendations intended to enable the companies to generate profits for reinvestment and to attract local and foreign investors.

Elements of Insurance Management, by Monico H. Ignacio (Financial Management Department)
CBE 40 MD (RC) 1989-90

This book was designed to introduce students to the nature and problems of insurance management under the Philippine setting.

It presents management principles and quantitative techniques. The author begins the discussion of risk management in Chapter 1, while Chapter 2 serves as an introductory chapter on insurance. Chapter 3 reviews the general principles of insurance, then discusses how one establishes and works within those principles. A clear concept of these principles is a prerequisite to all other discussion of insurance topics and managerial activity. Chapter 4 on Insurance Underwriting elaborates the in-depth application of the law of large numbers through a process of selection and rating. Chapter 5 stresses that insurance is basically the accumulation of fund through the payment of premium by the many insureds to indemnify the few who suffered covered losses. Chapter 6 discusses the various types of insurance carriers while Chapter 7 continues the discussion of insurance by focusing on government regulation and supervision of the insurance industry.

Chapter 8 incorporates traditional areas about managerial activities of direction on the insurance business. Chapter 9 elaborates how the business of reinsurance functions. Chapter 10 on Financial Statements and Margin of Solvency discusses accounting and provisions of law for insurance operations. Chapters 11 and 12 deal with insurance against peril, including transportation and fire risks, while Chapter 13 discusses casualty or accident insurance. Chapter 14 explains suretyship. This chapter emphasizes that surety companies have become more acceptable than personal guarantors. Chapter 15 discusses adequate life assurance protection for the financial hazards of life. The last chapter of the book views the insurance industry in perspective and discusses some current issues in insurance.

Demand for Milk in the Philippines: A Series of Three (3) Case Studies on Demand Forecasting, by Venancio Ramos de los Reyes, Jr. (Marketing Management Department)
CBE 2 MD (URCO) 1990-91

This is a descriptive study aimed to determine the demand for milk in the Philippines. Using a questionnaire, personal interview and documentary analysis, data were gathered from respondents composed of milk importers, processors, dairy farmers, and government technocrats in offices that encouraged dairy farming in the Philippines. The experiences of the respondents who were importing dried milk, were written in three case studies. These case studies may be used to project demand projections. Students may be asked to project the demand for dried milk given in Case A to be able compare these with the data in Cases B and C to determine which is more accurate. In addition to showing students how to use the formulas that they learned about projection, they will also be given an insight on the industry's national situation. The inefficient consumption of milk due to widespread poverty is illustrated in the cases.

The cases also discuss the problem/s prevalent in their time. Case A covered the period 1977 to 1983 when the dairy industry was hampered by low productivity and low per capita consumption of Filipinos. Case B covered the year 1984 when demand for milk further declined due to an increase in unemployment and consumers' weak purchasing power. Case shows the Philippine dairy industry in 1990. The production of milk was very low and it covered only a small percentage of actual milk requirements despite the efforts exerted by the government to improve it. These case studies were recommended for use in the following areas: marketing, environmental scanning, corporate planning, and economic forecasting.

References
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Anderson, Lane and Harold Sollenberger. Managerial Accounting.
CBE Project Abstracts

Dynamics and Effectiveness of Labor-Management Committees (LMCs) in Unionized Hotels and Restaurants in Metro Manila, by Dr. Divina M. Edralin (Business Management Department)
CBE 01 RP (URCO) 1993-94

The Labor-Management Council/Committee (LMC) as a form of worker participation in the hospitality industry was the focus of this study. This research attempted to confirm and analyze the LMC's functions, importance, system of implementation, and effectiveness as practiced in the unionized hotels and restaurants in Metro Manila. With the use of descriptive and evaluative type of research designs, 13 management representatives and 63 union representatives who actually sit in their respective LMCs from seven hotels and five restaurants were interviewed to gather data needed to answer the research problem and test the hypotheses posed at the beginning of the study. The variables were analyzed with the use of content analysis, percentages, weighted mean, test of proportion and ANOVA.

The findings confirm that the importance, actual functions, and system of implementation of LMCs in the unionized hotels and restaurants are similar to those of other LMCs in the Philippines, and to some extent to those in other countries like the United States, Spain, and Pakistan. Moreover, the LMCs are perceived to be satisfactory effective as a venue for participation in the policy and decision-making process in the establishment, in setting grievances, and in resolving conflicts. On issues/matters discussed in the LMCs, the study shows that they are resolved in a short period of time and their outcome are mostly in favor of the union.

Based on the results and discussion, it is suggested that LMC union and management representatives should discuss in their meetings the difficulties they encountered in the implementation of the Committee. It is also recommended that both parties need to re-orient their perspectives in the context of mutual trust, respect, open communication, and cooperation to improve the level of effectiveness of their LMCs.

A Critical Analysis and Evaluation of the Financial Status of Five (5) Selected Cement Companies, by Violeta Calanog (Accountancy Department)
CBE 44 RP (URCO) 1991-92

The proponent compiled and organized data on the Philippine cement industry. She determined the major financial issues which confronted the five (5) selected companies. The companies were selected on the basis of regional markets. Finally, she formulated a set of financial policy recommendations for these companies and for the industry as a whole. She based her study on the financial statements of the cement companies that were available at the Securities and Exchange Commission. In the absence of such financial statements, financial information were secured from the publications of the Business World and Mahal Kong Pilipinas Foundation Inc. on the Top 1,000 Corporations.

During the period 1987 to 1990, the five (5) cement companies studied registered a low level of profitability despite a high level of demand for cement. This situation was brought about by the existence of the price control mechanism which allowed cement companies to show thin profits during the periods of high demand.

See ABSTRACTS page 7

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