FACTORS THAT INFLUENCE OPERATING PERFORMANCE THROUGH THE USE OF EARNINGS OR GAINSHARING PLANS: EVIDENCE IN BRAZIL'S CHEMICAL INDUSTRY

Leonardo Fernando Cruz Basso*
Pós-Graduação em Administração
Mackenzie Presbyterian University
Edilson Gonçalves Teixeira
Pós-Graduação em Administração
Mackenzie Presbyterian University
Diógenes Manoel Leiva Martin
Pós-Graduação em Administração
Mackenzie Presbyterian University

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Abstract

The purpose of this Paper is to study: 1) Employee incentive programs, more specifically Gainsharing schemes in the Brazilian chemical industry; 2) Factors with positive effects upgrading the operating performance of the organizations that adopt them. The operating performance includes the following dependent variables: better quality; higher productivity; lower production costs; streamlined production process; and higher average bonus rates paid to the employees. The independent variables analyzed in this study were: employee involvement; method of measuring productivity; consultant involvement; bonus payments; employee votes; financial situation in the company; trade union support and involvement. The findings of an analysis of the data covering 110 companies through the Probit multivariate analysis proves the hypothesis that incentive programs have positive effects on managerial perceptions of the improvement in corporate operating performances.

Resumen

Este trabajo tuvo el propósito de estudiar: 1) los programas de incentivos ofrecidos a los empleados, la Participación en las Ganancias o Resultados y la Participación en los Resultados en las industrias químicas brasileñas 2) Los factores que influencian positivamente la mejora del desempeño operativo de las organizaciones que los adoptan. El desempeño operativo contempla las siguientes variables dependientes: mejora de la calidad, mejora de la productividad, reducción de los costos de producción, mejora del proceso productivo e índice promedio de pago de bonos a los empleados. Las variables independientes consideradas en este estudio fueron: involucración del empleado, método de medición de la productividad,

* Pós-Graduação em Administração, Mackenzie Presbyterian University. Rua da Consolaç ão, 930. 7 andar. Sala 76. Consolação. São Paulo-SP. CEP 01302-907. Telephone: (55)(11) 3236-8597. E-mail: leonardobasso@mackenzie.com.br; edilson.teixeira@mackenzie.com.br; dmmartin@mackenzie.com.br

involucración de consultores, pago del bono, voto del empleado, situación financiera de la empresa, apoyo e involucración del sindicado. Los resultados del análisis de los datos de 110 empresas, a través del análisis Probit multivariada, nos permitieron comprobar la hipótesis de que los programas de incentivos afectan positivamente la percepción gerencial sobre la mejora del desempeño operativo de las empresas.

JEL classification: J24, J33, J41
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1. Introduction

According to Aaker (2001), in order to implement a strategy successfully, it should be grounded on organizational competencies that should in turn be based on qualified personnel with the experience needed to implement the strategy selected by the company. Continuing, Aaker argues that the employees should be motivated to perform and implement this strategy, and this motivation can be achieved, for instance, by linking the remuneration structure to compliance with operating performance objectives and targets. Through variable remuneration (where the company rewards the employee for meeting preset targets), the interests of the individual can converge with the objectives and interests of the company and its shareholders. Incentive plans are designed to achieve this convergence of interests, persuading employees to be more than just elements in the production structure, and viewed rather as important factors for the entire process, committed to the targets set by the organization and rewarded for improvements in performance.

This paper intends to study and ascertain how Employee Incentive Plans effectively affect managerial perceptions of the operating performance of the organization, through Profit or Earnings-Sharing and Gain-Sharing Schemes. This Paper analyzes the following research problem: Do the characteristics or factors of Employee Incentive Programs such as Earnings or Profit-Sharing or Gain-Sharing Programs influence managerial perception of the operating performance of the company?

Along these lines, intensive plans may form the link between motivating employees to become partners in the business and the corporate quest to upgrade business performance, enhancing or improving profitability and performance. The legalization or officialization of Profit-Sharing or Gain-Sharing Schemes by the Brazilian Government - through the advent of Law No. 10, 101 dated December 19, 2000 provided leverage for the deployment of variable remuneration for all employees, establishing some rules. However, these constraints did not curb the creative flair of companies for defining targets and objectives that linked to their business strategies. Considering all these aspects, the main objective of this study is to discover whether incentive programs affect the operating and financial performance of companies that adopt them, according to managerial perceptions. We wish to check out any positive effects on productivity, from improvement in product quality and reductions in operating costs and overhead, to enhancement of production processes and consequently improvements in the overall performance of the organization. As an intermediate objective, we investigate whether companies set targets for the Profits or Earnings-Sharing Schemes or Gain-Sharing Schemes, making use of

the Economic Value Added (EVA^{TM}) concept that is rated as a powerful tool for creating sustainable incentives in the business unit, according to Young & O'Byrne (2001) and Stewart (1999), helping align management salaries with creating value for the shareholder. In order to deal with the research problem of the main objective, outlined above, the following hypothesis was drawn up: Incentive programs have positive effects on corporate operating performances. The operating performance includes the following dependent variables: enhanced quality; improved productivity; lower production costs; more effective production processes and higher average employee bonus payment rates. The independent variables analyzed in this study are: employee involvement; method of measuring productivity; consultant involvement; bonus payments; employee votes; financial status of the company; and the support and involvement of the trade union.

2. Theorical Benchmarks

2.1 Variable Remuneration

Variable remuneration is an expanding field for topics linked to human resources management, where the type of remuneration tends to be payment by performance (Altmansberger (2000)). This means the payment of a bonus sized to the performance attained by a group of employees or the organization, based on predetermined theories of targets or objectives (Belcher (2000); Davis & Newstrom (1992)). One of the major challenges facing management is to boost productivity through the direct employee involvement (Zall (2001)). According to this author, companies that make their employees partners in their businesses through a remuneration system that encourages high work performances have been rewarded with gains in both productivity and performance. According to Weiss (1994) people devote more effort to teamwork when they know that they will be rewarded through either payment (such as a bonus) or acknowledgement.

This means that they will be committed to the company when they see some organizational target or commitment linked to their own interests. Variable remuneration is linked to employee performance targets in such a way that these targets are connected to a clearly designed indicators system (Wood & Picarelli (1999)). It is vital that this link between performance and remuneration should be grounded on tools that ensure accurate performance appraisals (Flannery *et al.* (1997)). To some extent, the employee will always bear in mind the need to attain the highest possible productivity levels, striving to meet targets instead of easing up on the job, which really makes the variable remuneration system more attractive when compared to conventional fixed payment schemes (Altmansberger (2000)). For Wood and Picarelli (1999), variable remuneration is divided into two groups: remuneration by results; and profit-sharing. Some companies try to use a combination of these two processes, stipulating the amount of the premium or bonus to be distributed on the basis of targets that should necessarily be negotiated in order to reach the amount to be shared out among the employees.

2.2 Remuneration by Results

This type of remuneration is frequently confused with profit-sharing, blending a rewards or bonus system with participative management practices through

linking the value of the bonus to meeting specific targets that have been discussed and accepted in advance by the management and the employees. Consequently, formulas are established for measuring performance, converting the results achieved by the employees into these premium values (Della Rosa (2000); Wood & Picarelli (1999); Flannery *et al.*, (1997); Davis & Newstrom (1992)). In Remuneration by Results, the performance indicators for achieving the preset targets or results should be fully known and controlled by the employees. Only thus will workers accept higher risks and more responsibility for the success of the enterprise (Garrido (1999), Flannery *et al.* (1997)). If activities are performed properly or targets met, the rewards are shared among the entire group of employees (Flannery *et al.* (1997)). More specifically, the indicators do not include only profits or financial indicators, but also indicators reflecting quality, productivity, market shares, and lower costs or expenditures, delivery periods for products sold, customer complaints, etc., depending on the specific characteristics of the enterprise (Della Rosa (2000); Garrido (1999)). Della Rosa (2000) argues that setting targets based on results may endow the variable remuneration program with greater flexibility, due to the ease of establishing targets shaped to corporate characteristics.

2.3 Profit-Sharing

Profit-Sharing is a variable remuneration system that distributes to the employees part of the profits brought in through the businesses immediately after the end of the tax year, or on a pre-agreed date (Davis & Newstrom (1992)). Profit-Sharing differs from Gains-Sharing as it does not use formulas linking the performance indicators to the respective rewards; additionally, the rewards are distributed according to the general results of the company, rather than meeting specific targets (Wood & Picarelli (1999)). This system is rated as the most common incentive plan at non-managerial levels (Flannery *et al.* (1997)) with the target defined for employee participation being corporate profits (Della Rosa (2000)). Rewards paid out on the basis of profit alone do not place the employee in a position to judge whether the reward is fair or not. Doubts may arise, particularly over possible accounting adjustments taken into consideration in the profits, market contingencies (demand, government, etc.) over which the employee has no control. Consequently, the employee does not feel connected to company profits (Garrido (1999)). In order to prevent employees perceiving any credibility gaps between the data presented and the program, the administrator should make available all information on the profits posted during the period, presented in a clear and straightforward manner to all employees (Della Rosa (2000)).

2.4 Origins of Profit-Sharing or Remuneration through Results

The original Idea of sharing out profits or earnings sprang from an understanding that the State should share in corporate profits through charging taxes, in order to ensure that the people who help the company post profits also share in these earnings (Martins (1996)). One of the earliest records of profit sharing dates back to 1794 in the USA, when Albert Gallatin - Treasury Secretary during the Jefferson Administration - distributed part of the profits brought in through the operations of his glass-making factory. In 1812, Napoleon Bonaparte awarded part of the net profits to the actors in the *Comédie Française*,

in addition to their fixed remuneration, calculated at the end of the year. The criteria for distributing these profits among the performers took into account their fame, age and length of service. Around 1847, a start was made on implementing an earnings-sharing system in Prussia. Participation in earnings was adopted in the UK in 1850, and in 1869 in the USA. In 1917, Mexico included Earnings-Sharing in its Constitution as a mandatory measure for agricultural, industrial, commercial and mining enterprises, regulated a few years later. The Catholic Church was also concerned with this topic, as a way of easing social problems. In his *Quadragesimo Anno* (1931) Encyclical, Pope Pius XI, mentioned the need for corporate profit-sharing. Frederick Taylor argued that it was difficult to share profits with employees fairly, while noting that it was impossible for these employees to share in the losses (Martins (1996)).

2.5 Profits or Earnings-Sharing in Brazil

Profits or Earnings-Sharing in Brazil was initially covered in its 1946 Constitution, maintained in its 1967 Constitution, and covered once more in its 1988 Constitution (Pontes (1995)). Profits or Earnings-Sharing was regulated on December 29, 1994 through Provisional Measure N^0 794, which was re-issued several times before becoming Law No. 10, 191/2000 on December 19, 2000. Several authors view Profits or Earnings-Sharing as a management tool that strengthens the link between organizations and their employees when deployed intelligently, boosting productivity and consequently improving remuneration of both capital and labor (Della Rosa (2000); João, (1998); Martins (1996)). Pontes (1995) believes that adopting variable remuneration through Profits or Earnings-Sharing Schemes will offer major benefits for the company, boosting its productivity and making it more competitive while also benefiting employees through higher remuneration and the resulting greater purchasing power, which ushers in improvements for society in general. Payment of Profits or Earnings-Sharing should be linked to pre-set targets so that both employees and enterprises clearly perceive that the remuneration is rising (acknowledged by the employee) in parallel to productivity (acknowledged by the enterprise). Companies should avoid paying out Profits or Earnings-Sharing rewards merely by force of law without establishing targets and objectives for the employees, as expectations of enhanced productivity may not be met, because the employees are really unaware of the reasons why they are receiving the bonus (Della Rosa (2000)). According to Garrido (1999), as Profits and Earnings-Sharings are not rated as wages, they are not included in the basic wage for calculating labor and social security dues, making them attractive to both employers and employees. This is also rated as a tax-deductible operating expense for corporate legal entities when drawing up their balance sheets (Della Rosa (2000); Garrido (1999); Wood & Picarelli (1999)). On the employee side, no deductions are made for social security levies. Income tax is withheld at source on receipt of the amounts awarded under Profits and Earnings-Sharing Schemes, separate from other income received during the month (Della Rosa (2000); Garrido (1999)).

Table 1. Variables that were Impacted Positively by an Earning-Sharing Program.

Author Topic	Sheppard III 1994	Weiztman and Kruse 1990	Morrison 2001	Vôos 1997	Kim Dong 1996
Less employee absenteeism & lower turnover	X				
Positive effects on productivity	X	X	X	X	X
Higher productivity ratings			X		
Effects on profitability			X		
Effects on economic performance of earnings				X	X

Table 1. (continue)

Author Topic	Kim Seongsu 1998	Kruse 1993	Huselid 1995	Kruse 1992	Mitchell et al. 1990	Wadhwann and Wall 1990
Less employee absenteeism & lower turnover						
Positive effects on productivity	X	X				
Higher productivity ratings		X				
Effects on profitability	X					
Effects on economic performance	X		X			

Table 1. Variables that were Impacted Positively by an Earning-Sharing Program.

Author Topic	Sheppard III 1994	Weiztman and Kruse 1990	Morrison 2001	Vôos 1997	Kim Dong 1996
Lower production costs				X	X
Higher quality					X
Upgrade in poduction process					X
Smoother corporate comunications & information flows					
Better employee understanding					X

Table 1. (continue)

Author Topic	Kim Seongsu 1998	Kruse 1993	Huselid 1995	Kruse 1992	Mitchell et al. 1990	Wadhwann and Wall 1990
Lower production costs						
Higher quality						
Upgrade in poduction process						
Smoother corporate comunications & information flows				X		
Better employee understanding					X	X

2.6 Variables Affecting the Operating and Financial Performance of an Enterprise when Implementing a Profits or Earnings-Sharing Scheme

Several studies have examined the effects on corporate operating performance of Gainsharing Programs (Hatcher & Ross (1991); Kaufman (1992); Schuster (1983); Voos (1987)) and the factors influencing these results (Bullock & Tubbs (1990); Cooper, Dyck & Frohlich (1992); Gowen & Jennings (1991); Kim (1996); Kim & Voos (1997); Rosenberg & Rosenstein (1980); White (1979)).

Table 1 synthesizes the main findings: the lines show the variables that were impacted positively by a earnings-sharing program. The columns shows the authors responsible for the findings.

According to a theoretical review of these articles, taking an article by Kim (1996) as the basic reference, the independent variables explaining upgrades in operating performance are the following:

1.- Employee involvement: Employee involvement helps upgrade corporate operating performances for the following reasons: (i) using the creative flair of the employees to solve operating problems; (ii) increased trust between employees and management, with repercussions on firmer across-the-board commitments to organizational targets; (iii) interaction between group activities and monitoring these tasks.

2.- Frequency of bonus payments: As identified by Weiner (1972), the frequency of bonus payments (monthly, half-yearly or yearly) influences employee motivation levels, with rewards paid through the program, boosting employee performance and consequently enhancing corporate performance.

3.- Sharing out the bonus among the employees covered by the program: Incentive programs differ in terms of their bonus calculation methods and also the proportion in which the gains are shared with the employees. A larger share in the gains achieved by the program may prompt greater efforts and firm up employee commitment to upgrading the corporate performance.

4.- Payment of bonus to employees: The percentage bonus paid to the employees may be handled as either an independent or dependent variable, as this will affect the employee motivation levels and influence the performance of the program (Kim (1996)).

5.- Size of employee group: Some incentive programs cover all employees, while others include only a specific group with special targets, such as the specific targets of a department. This study analyzes the relationship between program results and the size of the employee group. The literature feels that smaller groups ensure in a better understanding of the incentives program, leading to better corporate operating performance.

6.- Calculating the bonus payment targets: Incentive programs differ from company to company, in terms of how the bonus payment targets are calculated. Although customized formulas may be taken under consideration, or those developed for a specific type of activity or company, this study considers only standard formulas, such as the Scalon method (productivity measured by the quotient between the value of the payroll with dues and levies, and the net sales value), the Rucker method (productivity measured by the quotient between the payroll with the levies and dues and the total amount of net sales less the costs

of raw materials, feedstock and services) and the Improshare method (measured through production standards for all company products that form part of the program).

7.- Involvement of outside consultants: It is not likely that an incentive program will be developed and brought into operation without the help of specialized consultants. Outside consultants can provide expertise as well as endowing the program with credibility. Consequently, it is expected that the involvement of outside consultants in the design and operation of the program may well enhance its results.

8.- Election by ballot: Checking whether or not ballots are held among the employees to approve the implementation of the program. It is assumed that all incentive programs require active employee participation in order to upgrade operating performances. One way of encouraging active participation is allowing the employees to ratify the proposed program. Consequently, employee participation through voting on the implementation of the program may well step up their commitment to successfully conducting the program.

9.- Labor-intensive or capital-intensive enterprise: Companies with labor-intensive production processes may encourage their employees to participate more actively in the program through adopting a suggestions and innovations system. According to Kim (1999), companies with labor-intensive production systems offer more opportunities for employees to cooperate with Profits or Earnings-Sharing Programs through suggestions for upgrading the production process; in contrast, companies with capital-intensive production processes making heavier use of machinery or mechanized processes do not offer the same opportunities for discovering employee opinions on upgrading these processes.

10.- Expansion of market shares: A condition for the success of an incentive program is the expansion of the market share or expansion of the market itself. As one of the objectives of an incentive program is to boost productivity, an expanding market share should be available to absorb the increase in output. Otherwise, higher output with no expansion in market share (or expansion of the market itself) may lead to lay-offs (Zalusky (1986)). Any possibility of lower employment may discourage the employees from putting their best efforts into the program (Cooke (1989)).

11.- Financial status of the organization: The employees of companies that are financially sound expect that their efforts will be taken under consideration or be properly rewarded when measuring the results linked to incentive programs. This link between operating performance and financial rewards (bonus) may motivate employees to perform better. Additionally, companies with a good financial status may allocate more funds to administering the program,

12.- Average employee education level: The success of any organization depends on human efforts to develop it (Kim (1996)). Employees with high education levels (high human capital stock) are endowed with more knowledge and can help ensure that the incentive program is successful, meaning better corporate operating performance.

13.- Average employee length of service: It is expected that employees who have been working longer for the company would devote more effort and be more committed to the incentive program. This can enhance performance for

the following reasons: (i) they have more experience and more expertise for putting forward suggestions than newer employees, and (ii) the commitment of these employees is firmer, due to low turnover and greater interest in keeping their jobs.

14.- Trade Unions: It is expected that trade unions will serve as mediators between employees and management in companies where they function, during discussions of the targets, clearing up doubts and encouraging the employees to upgrade their performances. The trade unions are eager to cooperate with their members, as their support will be firmed up when this cooperation results in gains for the employee.

15.- Trade union support or involvement in administering the Profits or Earnings-Sharing Program or Gain-Sharing Scheme (applied only to companies where trade unions are active): Should the trade union be against the incentive plan and not agree with the targets set by the organization, the employees may not be firmly committed to its objectives and their performances will not improve, as a result. Trade union support can ensure higher acceptance levels among the employees, while also using resources or tools that endow workers with more power in desiguing and operating the program.

16.- Program Duration: Number of years in operation of incentive program. The link between the duration of the program and its success is an empirical issue (Kim (1996)). According to this author, successful programs are more likely to continue, compared to their less successful counterparts. In Brazil, these programs are mandatory, but this does not mean that they are successful, particularly when no improvement in operating performance is noted.

The dependent variables that will operationalize (characterize) corporate operating performance are the following:

1. Upgrades in product quality
2. Higher productivity
3. Lower production costs
4. Improvements in production processes
5. Higher bonus paid to the employees

Grounded on the literature produced on this topic, we attempt to replicate in Brazil the hypotheses established by Kim (1996).

Employee involvement:

Hypothesis: Incentive programs with a formal employee involvement scheme leads to better corporate operating results than those with no employee involvement.

Frequency of bonus payments:

Hypothesis: The more frequently the bonus is paid, the better the corporate operating performance.

Sharing out the bonus among the employees:

Hypothesis: The larger the portion of the bonus that is shared out among the employees, the better the corporate operating performance.

Bonus payment:

Hypothesis: The higher the bonus percentage paid to the employees, the better the corporate operating performance.

Size of group covered by the program:

Hypothesis: The smaller the size of the group of employees among whom the bonus is shared out, the better the corporate operating performance.

Methods of calculating the program bonus:

Hypothesis: The development of a customized or standardized incentive program will result in a better corporate performance.

Involvement of outside consultants:

Hypothesis: The involvement of outside consultants will be related positively to a better corporate operating performance.

Implementation of incentive programs through employee ballot:

Hypothesis: A majority vote by the employees approving the introduction of the incentive plan will be related positively to a better corporate operating performance.

Labor-intensive production system:

Hypothesis: Companies with labor-intensive production systems will post a better corporate performance than companies with capital-intensive production systems.

Market share:

Hypothesis: Companies with expanding market shares will be related positively to better corporate performance.

Corporate financial status:

Hypothesis: Companies that are more successful in financial terms will be related positively to a better corporate performance than companies in a poor financial situation, or those posting losses.

Employee education levels:

Hypothesis: Incentive programs for employees with more schooling will be positively related to a better corporate performance.

Employee length of service:

Hypothesis: Companies whose employees have longer lengths of service will be positively related to a better corporate performance than companies with new employees.

Trade unions:

Hypothesis: Companies whose employees belong to trade unions will be positively related to a better corporate performance.

Trade union support for the program:

Hypothesis: Incentive programs supported by trade unions will be positively related to a better corporate performance.

Program duration:

Hypothesis: Companies with longer-duration incentive programs will post better operating performances than companies with more recent programs.

2.7 Variables that affect the operating and financial performance of a company when implementing a Profits or Earnings-Sharing Program

Taking an article by Kim (1996) as a benchmark, the independent variables explaining the upgrade in operating performance will be the following: employee involvement, frequency of bonus payment, share-out of the bonus among the employees covered by the program; payment of bonus to the employees; size of the group of employees; calculation of the targets for payment of the bonus; involvement of outside consultants; election by ballot; labor-intensive or capital-intensive company; expansion in market share; financial status of the organization; average formal education of the employees; average length of service among the employees; membership of trade union; trade union support or involvement in administering the Profits or Earnings-Sharing Program or Gain-Sharing Program; age or length of application of the program.

The dependent variables that will operationalize (characterize) the operating performance of the organization are the following: enhanced product quality; improved productivity; lower production costs; upgraded production process; higher bonus paid to the employees.

3. Economic Value Added (EVA^{TM})

In general, companies are deeply concerned with generating value for their shareholders. Consequently, the management may not focus only on the net profit posted in the accounting reports. They should use the Economic Value Added (EVA^{TM}) system that calculates whether the invested capital is being correctly or properly remunerated (Ittner & Larcker (1998)). This is one of the performance measurements used to monitor the creation of value by a specific business or operating unit (Shinder & Macdowell (1999)) ensuring that the managers or administrators are properly equipped to understand the real gains or returns in a more appropriate manner (Pettit (2000)). This means that, from the EVA^{TM} standpoint, the company will be creating value for the shareholder should it bring in returns on invested capital that exceed the cost of its own capital and that of third parties together (Young & O'Byrne (2001); Ehrbar (1998)). The EVA^{TM} formula consists of the Operating Profit or Economic Profit less the Average Cost of the Capital Employed, which consists of the cost of the company capital and the cost of third-party capital (Allen (2000); Peterson & Peterson (2000)). The company will add value if the EVA^{TM} is positive, otherwise the shareholder has invested money poorly. According to Ehrbar (1998) one of the secrets of the success of any enterprise is related to the compensation system used to shape or direct the behavior of the employees furthering the interests of the company. The author then states that the success of the EVA^{TM} is directly connected to the fact that the companies should link the incentive plans to the EVA^{TM} value creation methodology, using the imagination and initiative of the workers and managers to upgrade productivity and boost the value of the company for the shareholders. When the EVA^{TM} is tied to variable remuneration, the company can create a bonus bank with different levels of leverage should the company attain the proposed EVA^{TM} gains. The EVA^{TM} methodology stresses that the bonus bank is necessary in order to avoid distributing all the gains in a specific year (Young & O'Byrne (2001); Stewart

(1999)). This is necessary in order to prevent managers adopting stances that benefit them over the short term, failing to invest in order to boost the profit rate and consequently the EVA^{TM}, and penalizing the company over the long term.

3.1 Value Drivers

These are pro-active measures through which companies can act in order to bring forward earnings so as to create value for the shareholders (Rappaport (2001); Young & O'Byrne (2001)). There are two types of indicators: financial and non-financial. The financial types are historical data that assess performance after it has occurred. This is why they are considered lagging indicators (Young & O'Byrne (2001)). Black & Wright (2001) identify seven financial indicators, dividing them into three categories:

1. Growth: The level of activity is the measurement related to the growth objective (Eiranova (1999)). This includes increases in sales, investment in working capital and investment in fixed capital.

2. Return: The return on investment must be higher than the capital cost needed to finance this investment (Eiranova (1999)). This includes the operating profit margin and the income tax rate.

3. Risk: The expected cash flow may be altered by the level of exposure to risk (Eiranova (1999)). This includes the cost of capital and the period of the competitive advantage.

Companies need indicators that can foresee value creation and indicate the value being created or destroyed before the facts actually occur. Known as leading indicators, these are the non-financial type. According to Ittner *et al.* (1997), the use of financial measurements alone to assess performance is not sufficient to motivate the management to act in accordance with the interests of the proprietors. Based on the work by Ittner *et al.* (1997), Young and O'Byrne (2001) present the following non-financial indicators: customer satisfaction; non-financial strategic objectives; product or service quality; employee safety; productivity; market share; employee satisfaction; employee training and innovation. There are four dependent variables used in this study (product quality upgrade, productivity, production process upgrade and higher bonus paid to the employee), which are non-financial indicators. Cost reduction is a financial indicator. It may be argued that upgrading corporate operating performance does not necessarily result in creating any higher added economic value. This is true, and is a matter to be settled through empirical studies. However, in theoretical terms, a connection may be established between productivity, cost reduction and value creation.

Due to the significance of productivity and cost reduction for the competitive edge of a company, we reproduce the connection here.

3.2 Relationship between Productivity and Economic Value Added

Several studies, including that by Kim (1996) that we will replicate in Brazil, ranked productivity as an essential variable for measuring corporate operating performance. Productivity is rated as a value indicator, and is connected to a significant variable for measuring corporate value creation: added economic

value. Productivity was introduced into the EVA^{TM} formula by Basso (2002) and Basso *et al.* (2001). Stressing a forgotten characteristic of the EVA^{TM}, its relationship to the demonstrated added value and productivity (De Lucca & Martins (1998); Gray & Mauders (1980); Gray & Meek (1988)) the authors rewrote the best-known EVA^{TM} formula.

Added Value (AV) is the difference between the Gross Production Value (GPV) and Intermediate Consumption (IC) (Dornbusch & Fischer (1994); Simonsen & Cisne (1995)):

$$GPV - IC = Added\ Value\ (AV).$$

This amount is initially assigned to the employees (LC-Labor Costs) and what remains is the Gross Operating Profit (OP):

$$AV - LC = OP.$$

The second allocation goes to the Government, which demands a portion of the gross operating profit, represented by the tax rate (t):

$$(AV - LC) \times (1 - t) = OP \times (1 - t).$$

Substituting the operating profit in the EVA^{TM} definition, the following equation is obtained:

$$EVA^{®} = OP \times (1 - t) - CTC \times (1 - t) - CCC \times (1 - t),$$

$$EVA^{®} = AV \times (1 - t) - LC \times (1 - t) - CTC \times (1 - t) - CCC \times (1 - t),$$

Where: CTC is the Cost of Third-Party Capital and CCC is the Cost of Company Capital.

Substituting the added value by its definition, the following equation is obtained:

$$EVA^{TM} = (GPV - IC) \times (1 - t) - LC \times (1 - t) - CTC \times (1 - t) - CCC \times (1 - t).$$

Such as:

$$(AV - LC) \times (1 - t) = OP \times (1 - t)$$

and

$$(GPV - IC - LC) \times (1 - t) = OP \times (1 - t).$$

So:

$$EVA^{TM} = (GPV - IC - LC) \times (1 - t) - CTC \times (1 - t) - CCC \times (1 - t).$$

Substituting the Gross Production Value by its definition, the following equation is obtained:

$$EVA^{TM} = (P \times Q - IC - LC) - tAV + tLC - CTC \times (1 - t) - CCC \times (1 - t).$$

Multiplying and dividing the amounts produced by the number of hours worked (HW) in order to produce them, the following equation is obtained:

$$EVA^{TM} = P \times (Q/HW) \times HW - IC - LC - tAV - tLC - CTC \times (1-t) - CCC \times (1-t),$$

$$EVA^{TM} = P \times PROD \times HW - IC - LC \times (1-t) - tAV - CTC \times (1-t) - CCC \times (1-t).$$

Dividing the expression by the Net Operating Assets (NOA) meaning the assets used to produce the Added Economic Value, the following equation is obtained:

$$(EVA^{TM}/NOA) = P \times PROD \times (HW/NOA) - (IC/NOA) - [LC \times (1-t)/NOA] - (tAV/NOA) - AWCC,$$

where $AWCC$: is the Average Weighted Net Capital Cost. And Where $PROD$: is the labor productivity; HW/NOA: is the efficiency of the Net Operating Profit; IC/NOA: is the share held by intermediate consumption in the net operating asset; $LC \times (1-t)/NOA$: is the labor share in the net operating asset; tAV/NOA: is the tax share of the added value in the net operating asset; and $AWCC = [CTC \times (1-t) + CCC \times (1-t)]/NOA$.

The following equation is obtained:

$$\begin{aligned} EVA^{TM} = [&P \times PROD \times Efficiency\ of\ the\ NOA \\ &- Intermediate\ Consumption\ Share\ in\ the\ Net\ Operating\ Asset \\ &- Labor\ Share\ in\ the\ Net\ Operating\ Asset \\ &- Tax\ Share\ on\ the\ Added\ Value\ in\ the\ Net\ Operating\ Asset \\ &- Average\ Weighted\ Net\ Capital\ Cost] \times NOA. \end{aligned}$$

This equation shows all the variables that increase the economic profit, namely: increase in price; increase in productivity; increase in the efficiency of the net operating asset; reduction in the intermediate consumption share in the net operating asset; reduction in the payroll share at a proportion of the net operating asset; reduction in the tax load on the added value at a proportion of the net operating asset; reduction in the average weighted capital cost. The formula clearly explains the relationship between the increase in productivity and the increase in the Added Economic Value, provided that all the other factors remain constant.

3.3 Dependent and Independent Variables used in the Study

Table 2 gives the dependent and independent variables used for the determining factors according to the perceptions of the management or the administration for upgrading corporate operating performance.

Table 2. Description of the Variables Studied.

Dependent Variables	Description
Improvement in Quality $D3-01$(non-financial)	Perception that the program upgraded product quality: 1 improvement and 0 no improvement
Improvement in Productivity $D6-01$-(non-financial)	Perception that the program upgraded productivity: 1 improvement and 0 no improvement
Reduction in Costs $D7-01-$(financial)	Perception that the program reduced costs: 1 yes and 0 no
Improvement in Production process $D8-01$(non-financial)	Perception that the program upgraded the production process. 1 yes and 0 no
Average Bonus Rate Paid $D5-01$-(non-financial)	Perception of how much bonus is paid 1 5% or more and 0 under 5%
Independent Variables	Description
B5-Employee involvement	Perception of employee involvement in the program: 1 yes and 0 no
B1-Bonus payment frequency	1 if bonus payment made annually and 0 other (half yearly, monthly, etc.)
B4-Proportion of bonus paid to the employee	Percentage bonus paid to the employee
E3-Small bonus group	1 if the beneficiary group consists of less than 100 employees and 0 for groups of more than 100 employees
B2-d1-Scanlon plan	1 yes and 0 no
B2-d2-Rucker plan	1 yes and 0 no
B2-d3-Modified Scanlon plan	1 yes and 0 no
B2-d4-Imposhare plan	1 yes and 0 no
C1-Consultant involvement	1 consultant involvement and 0 no consultant involvement
C2-Employee ballot	1 employee ballot and 0 no employee ballot
E2-Labor-intensive	1 labor-intensive and 0 capital-intensive
E8-Financial status	1 financial status stable and 0 financial status unstable
E5-Average employee education	Average employee education (years)
E6-10-Length of service 1	% employees with less than 10 years length of service
E6-1020-Length of service 2	% employees with 10 or more and 20 or less years length of service
E6-20-Length of service 3	%employees with more than 20 years length of service
F1-Trade union	1 if the employees belong to the trade union and 0 if not
TIME-Duration of program	Years in operation of the program
F3-Trade union support	1 if the trade union supported the programand 0 if not

Source: Prepared by the authors, based on a review of the theoretical framework.

4. Methodology

In addition to presenting the findings of the frequency distributions, the descriptive statistics were analyzed. Due to the non-Gaussian nature of the scale variables in the study, the statistical procedures were adopted: Spearman's Ordinal Correlation Coefficient, which was used in the analysis of the correlation among the scale values; the Chi Square association test, which was used in the analysis of the association among the nominal variables; Mann-Whitney test, which was used in the analysis of association among the dichotomic nominal variables and the scale variables; the Probit Multivariate analysis, which was used in the analysis of the effect of the independent variables in the study on the dependent variables. It should be noted that the selection of the Probit analysis was prompted by the fact that the data are of the quantum response type, meaning a regression model in which the dependent variable is a proportion and the independent variable may be either scale variables or ordinal or nominal variables (Hoffman (1997); Butler & Chatterjee (1995)). The Probit transformation was proposed by Bliss (1935), Apud Hoffman (1997) and is a model based on the normal standard distribution.

The model assumes that:

$$P_i = F(\alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k),$$

where P_i is the probability of noting success in the $i - n^{th}$ observation (in our case the performance of the program of the $i - n^{th}$ company to be adapted); $X_1 + X_2 + \cdots + X_k$: represents the independent variables of the model (in our case, the factors or the characteristics mentioned in the research problem); $\beta_1 + \beta_2 + \cdots + \beta_k$: measures the effect which each of the independent variables has on the dependent variable;

$$F(z) = \int_{-\infty}^{z} \frac{e^{-\frac{u^2}{2}}}{\sqrt{2\pi}} \mathrm{d}u$$

represents the accumulated distribution function of a reduced normal variable. If we consider the function F^{-1}, the inverse function of F, we have:

$$Y_i = F^{-1}(P_i) = \alpha + \beta_1 + \beta_2 + \cdots + \beta_k$$

in which Y_i is a random variable that was called the Probit.

The Probit regression assumes that the Probit has normal distributions, that the observations of the variables are independent, and that the data derives from an experimental delineation, which does not occur in this study, which follows the methodology used in the Kim study (1996). With regard to the inferential analyses, the P-Value associated with the nullity hypothesis (Ho) adopted in each test, was calculated for each of them. The P-Value measures the evidence in favor of the Ho, and consequently a large P-Value corresponds to ample evidence in favor of Ho. In this study, all difference, correlation or association whose P-Value was under 0.05 was rated as statistically significant. It should be noted that the P-Value corresponds to the probability of observing

a value higher than that sampled, assuming that the null hypothesis is true, consequently the P-value varies from 0 to 1.

5. Findings

5.1 Population and Sample

Our target population under investigation consisted of companies belonging to the Brazilian Chemical Industry Association (Abiquim - *Associaçção Brasileira da Indústria Química*). The sample initially consisted of 250 companies registered with Abiquim; however, of the 250 questionnaires forwarded, we received 115 back, of which five were discarded, resulting in a (pseudo-random) sample of 110 companies in the target population (44%).

It is understood that this way of collecting data results in a distortion due to the lack of replies, which may undermine the quality of our conclusions. Nevertheless, several studies have been carried out using this methodology, and these studies start out from the principle of the impossibility of eliminating this no-response distortion in sample studies (Hoffman (1997)). A questionnaire was used as a tool for collecting the data requesting information on corporate characteristics and profit-sharing programs. Recipients of the questionnaire were the Human Resources and Industrial Relations executives, who were felt to be the main administrators or people in charge of the incentive plans such as Profits or Earnings-Sharing or Gain-Sharing Schemes. The recipients of the survey were questioned about the characteristics of their establishments, their employees, their relationship with the relevant trade union, the industrial sector in which they operate, the detailed conditions of the incentive program implemented at the company, the specific implementation procedures, and the assessment of the performance of the incentive program as perceived by these executives.

5.2 Data Analysis

Turning the raw data into information that allows the measurements proposed in this research project was a significant challenge in terms of transposing the files available in specific databases to electronic spreadsheets (MS Excel), and their subsequent correct reading by the statistics software (SPSS and WinSTAT). Most of the respondents believe that the incentive program helped upgrade corporate operating performance. It was noted that 82 companies (74.5%) replied that they were concerned with the understanding of their employees in terms of the incentive program, training over 80% of their workers. It is also noted that the companies rated the following aspects as Very Important in the incentive program implementation: enhanced labor-force productivity (69.1%); improved product quality (65.5%); lower production costs (58.2%); and higher compensation for employees (52.7%). The companies were asked whether they used the EVA^{TM} methodology in the targets set for the incentive plans. Out of the total number of respondent enterprises, affirmatives were received from 27 companies that use the EVA^{TM} methodology (only 24.5%), while 83 companies say that they did not use the EVA^{TM} in the incentive plan targets. Of the companies using the EVA^{TM}, 29.6% apply only to senior management, 11.1% for senior management and middle management, and 59.3% for all employees.

5.2.1 Analysis of the Influence of the Factors on Operating Performance

The influence of the factors on the program performance variables was assessed by the Probit model and the association analysis. Adopting these two methodologies was prompted by the fact that the Chi Square test and the adjustment goodness statistics for the Probit model may not be valid for a large number of values of the independent variables related to the number of observations. Consequently, the association analysis offers added security in assessing the study hypotheses. We note the perception of management on the improvement in the operating performance due to the influence of the independent variables, demonstrated in Table 1. In the Probate analysis, a significant statistical finding was considered to be a regression coefficient on the standard error at the 10% level (cut-off point: 1.28); at the 5% level (cut-off point: 1.64); and at the 1% level (cut-off point: 2.33).

5.2.2 Proving the Hypotheses

Using the Probit model to assess and analyze the influence of the independent variables on the program performance variables, together with the association analysis, the factors are listed below that produced statistically significant results with the dependent variable, influencing the perception of the improvement in operating performance: employees belonging to trade unions; companies that divide the bonus gains with the employees better; companies that do not note any shrinkage in market share; companies whose employees have less than twenty years length of service; companies that did not call in outside consultants; employee ballots on implementing the program; companies with longer time (years) of operation for the program; shorter intervals between bonus payments. Consequently, the hypothesis was confirmed that incentive programs have positive effects on the perceptions of management on corporate operating performance, although not all the factors or independent variables (shown in Table 1) effectively influence the operating performance.

The effects of these values are analyzed individually below, in order to understand their influence on the findings or the operating performance, according to the perceptions of management.

- Employee involvement: 84.5% of the companies indicated employee involvement in the incentive plans run by these companies. Consequently, it is expected that employee involvement influences the perception of the improvement in the operating performance through a creative approach to solving problems, as well as strengthening the relationship of trust between the management and the workers, with greater commitment to corporate targets. A statistically significant association was noted between this variable and the perception in quality. These findings are consistent with the Kim survey (1996).

- Bonus payment frequency: The frequency or regularity of the bonus payment (monthly, weekly or yearly) may affect the employee motivation level, as their performance improves through these rewards, with parallel improvement in the corporate performance (Weiner (1972)). Consequently, it seems likely that the frequency of the bonus payments may affect corporate performance; however, a statistically significant association was found only for the cost reduction variable. For the other factors, the statistical association was insignificant.

• Share-out of the bonus among the employees: It is expected that the larger the share of the gains assigned through the program to the employees, the greater their effort and commitment to upgrading corporate performance. The Probit analysis demonstrated that the way in which the bonus is shared out among the employees had a statistically significant association with all the dependent variables for the perception of the improvement in the operating performance, with positive effects on quality upgrades, higher productivity, lower costs and improvements in the production process. These findings indicate that the companies are careful to reward employee efforts when sharing out the bonus, doing so in a fair and equitable manner.

• Bonus Payment: Gain-sharing- as incentive plans tied to earnings are called in the USA - establishes the share-out of the gains of an operating plant with the employees through proven improvement in the operating performance. Consequently, we work on the hypothesis that the percentage of the bonus paid to the employee may affect the level of employee motivation, being dealt with as both an independent and dependent variable, as this will affect the level of employee motivation, influencing the performance of the program (Kim (1996)). This variable has an important and significant relationship to all aspects of the incentive program performance, and as a result the successful assessment of the corporate performance. Another discussion focuses on the existence of a non-linear relationship between the bonus payment and the results presented by the incentive program, as a very low payment, below that expected by the employees may serve as a demodulating factor, while a very high bonus may result in adverse consequences, causing the employees to lose confidence in the program targets and triggering disputes (Kim (1996)). However, it is noted that this variable presented a non-significant statistical association, which really countered our expectations.

• Size of the group covered by the program: As discussed, some programs cover smaller groups or larger groups in a single company, sharing out the gains achieved with the agreed targets, dividing the gains achieved by the agreed targets. Consequently, the hypothesis was considered that a smaller group in a company would result in a broader awareness of the incentive program operations, influencing the perception of the improvement in corporate performance. A statistically significant association was found between this variable and the improvement in the production process. Coefficients in the other equations show insignificant indications; however, there is some backing for the hypothesis that a smaller group of employees in an incentive program may result in a better operating performance than larger groups of employees.

• Methods of calculating the program bonus: As incentive programs differ from one company to another in the manner in which their targets or objectives are agreed, the hypothesis was consequently used that the customized formulas or targets designed for each type of organization would be better than the standard formulas, such as the Scanlon method (productivity measured by the quotients between the value of the payroll with charges and the net sales value; the Rucker method (productivity through the quotient between the payroll with charges and the total net sales less the costs of raw materials, feedstock and services) and the *Improshare* method (measured through standard production hours for all products made by the company that are covered by the program).

It is noted that the *Scalon* productivity method had a statistically significant association with improved productivity, lower costs and production process upgrades. For the other factors, the statistical association was insignificant.

Table 3. Probit Analysis: Perception of the Improvement in the Operating Performance (Standard Error in Parentheses).

	Dependent Variables				
Independent variable	Improvement in Quality	Improvement in Productivity	Cost Reduction	Improvement in Production Process	Bonus Payment
Bonus Payment Frequency	0.12970 (0.6893)	−0.48860 (0.5521)	−0.19827 (0.5762)	−0.49209 (0.4683)	−.73256* (0.6435)
Scanlon plan	−0.52149 (1.6431)	−1.65242* (1.0543)	−2.17564** (1.0073)	1.34716* (0.8283)	−0.20752 (2.3141)
Rucker plan	0.61495 (0.7889)	−0.16630 (0.5924)	0.12294 (0.6250)	0.61302 (0.5428)	−0.18877 (0.7372)
Imposhare plan	0.72457 (2.0972)	0.07910 (1.9639)	0.50446 (2.3916)	0.32753 (2.4486)	0.09085 (2.2378)
Employee Involvement	0.18681 (0.7388)	−0.01493 (0.5720)	−0.66040 (0.6202)	0.21540 (0.4379)	0.36493 (0.9861)
Consultant Involvement	−0.33505 (0.9881)	−0.69604 (0.6828)	−1.33339** (0.7928)	−1.56375*** (0.5621)	0.50951 (1.0067)
Employee Ballot	0.12309 (0.5717)	−0.06393 (0.4811)	−0.39268 (0.5178)	.58280* (0.4072)	0.01937 (0.5954)
Labor Intensive	0.70011 (0.6599)	−0.03272 (0.5007)	−0.66447* (0.5121)	0.30368 (0.4338)	−0.39509 (0.6099)
Small Bonus Group	−0.26671 (0.5958)	−0.03167 (0.4770)	−0.23695 (0.5212)	0.78457** (0.4684)	0.43413 (0.5969)
Market Growth	−0.07095 (0.5604)	−.76536* (0.4939)	−1.48338*** (0.4926)	−1.07277** (0.4822)	0.44338 (0.5901)
Financial Status	0.12788 (0.6725)	0.23940 (0.6055)	−0.01130 (0.6144)	−0.16570 (0.5945)	−0.70904 (0.6799)
Trade Union Membership	1.5391*** (0.5347)	1.068*** (0.4555)	0.9566** (0.4601)	.8473** (0.4346)	−.6486* (0.5420)
Average Employee Education	−0.0677 (0.2420)	−0.2022 (0.1894)	−.2956* (0.2170)	−0.396** (0.1899)	−.3504* (0.2438)
Employees with less than 10 years service	0.00863 (0.0389)	0.03600 (0.0298)	.04702* (0.0328)	.07716** (0.0369)	0.02853 (0.0405)
Employees with 10-20 years service	−0.01763 (0.0403)	0.02168 (0.0299)	0.03768 (0.0331)	.05290* (0.0357)	.04384* (0.0400)

Table 3. (continue).

	Dependent Variables				
Independent variable	Improvement in Quality	Improvement in Productivity	Cost Reduction	Improvement in Production Process	Bonus Payment
Employees with more than 20 years service	0.04194 (0.0433)	−.05351* (0.0417)	−0.03043 (0.0430)	.06970* (0.0461)	0.01083 (0.0493)
Proportion bonus paid to employee	−0.021** (0.0100)	−.0233*** (0.0082)	−0.0379*** (0.0104)	−.0231*** (0.0072)	0.0061 (0.0090)
Duration of program	0.04833 (0.0859)	0.14619* (0.0958)	0.05358 (0.0870)	.06651* (0.0493)	−0.04922 (0.0891)
Average rate paid	0.43674 (0.8304)	1.40920* (0.9278)	0.33925 (0.7613)	−0.55737 (0.7296)	
Trade union support	−2.74660	−3.04920	0.46755	0.18872	−.85293*

Source: Prepared by the authors from the research data.

• Involvement of outside consultants: The hypothesis identifies that the involvement of outside consultants in the implementation and operation of the incentive program may enhance its credibility, although the research findings did not indicate any statistically significant association, with in fact significant indications appearing between consultant involvement with cost reductions and production process upgrades. Consequently, this hypothesis was not proven, being compared to the same findings achieved by Kim in his research project.

• Implementation of the incentive program through employee ballot: This hypothesis affirms that the success of an incentive program requires active employee participation. Consequently, this should offer the employees the opportunity to take the decision on whether or not to implement the program. The findings of the Probit analysis show that the implementation of the incentive program through an employee ballot affects the production process upgrades. The analysis of association between the factor and the dependent variables through the Chi Square test shows a statistically significant association with the improvements in quality and the production process.

• Labor-intensive production system: In companies with labor-intensive production systems, the employees can participate more actively in the program through adopting a suggestions and innovations system. According to Kim (1999) companies with a labor-intensive production system offer greater opportunities to employees to cooperate with the profit-sharing or gain-sharing program through suggestions for upgrading the production process; in contrast, companies with capital-intensive processes making more use of machinery for mechanized processes do not have the same opportunities to discover the opinions of the employees in order to upgrade the process. As expected, the findings

of the Probit analysis show that this variable has positive effects on lowering production costs, confirming the hypothesis.

• Expansion of market share: A condition for the success of the incentive program is market growth or expansion. As the main object of the incentive program is to boost productivity, market growth should be available to absorb the expansion in production, otherwise the increase in production with no market expansion may result in layoffs (Zalusky (1986)). Any possibility of reduction in employment may discourage the employees from working harder through the program (Cooke (1989)). Statistically significant associations were noted between this variable and improvements in the production processes and increased productivity, as well as lower production costs. This hypothesis was consequently proven.

• Financial status of the company: The employees of companies with stable financial status or sound health expect that their efforts will be taken into consideration or be well-rewarded when measuring the gains linked to the incentive programs. This link between operating performance and financial rewards (bonus) may motivate the employees to perform better. The findings of the database analysis examined by the survey did not show any statistically significant association. Consequently, this hypothesis was not proven, compared to the findings obtained by Kim in his survey, which also presented weak evidence on this point.

• Employee education: The hypothesis under consideration was that employees with more education would have better knowledge and be able to contribute to the incentive program being a success, and consequently leading to better corporate performance (Cotton (1993)). However, this hypothesis was not proven, with negative indications in the statistical analysis for cost reductions, productivity and production process upgrades.

• Employee length of service: It is expected that employees with more length of service would devote greater effort and be more committed to the incentive program. This would enhance the performance for the following reasons: (i) they have more experience and expertise for putting forward suggestions than employees who have been working for the company for shorter periods of time; and (ii) the commitment of these workers to the program is stronger, due to low turnover and their greater interest in keeping their jobs. A statistically significant association was found in terms of improvements in productivity and production process upgrades, proving this hypothesis.

• Employee membership of trade unions: It is expected that, when discussing the targets with companies where trade unions function, these entities would serve as mediators between the employees and the management, clearing up any possible doubts between them and encouraging the employees to upgrade their individual performances and consequently enhance the corporate performance as well. A statistically significant association is noted for all variables related to the perception of the improvement of the corporate performance, particularly product quality improvement.

• Trade union support for the program: This analysis was used only for the eighty companies in the sample with trade unions, for considering trade union support or involvement in the administration of the incentive program. Should the trade union be against the incentive program, not agreeing with the

targets set by the company, the employees may not be committed to the plan and consequently, the performance would not improve. Trade union support can endow the program with a higher employee acceptance rate, and can also deploy resources or tools ensuring that employees have more say in the design and operation of the program. Using the Probit analysis, no statistically significant association was found between trade union support for the program and the management perception variables of the improvement in corporate performance. The regression coefficients for the bonus payment index presented a negative indication.

• Duration of the Program: The number of years that the incentive program has been in operation is related to better performance, with effects on corporate performance as well. The association between the duration of the program and its success is an empirical issue (Kim (1996)). According to this author, successful programs are more likely to be continued, in contrast to programs that fail. The Probit regression analysis showed a statistically significant association for improvement in productivity and production processes, partially proving this hypothesis.

6. Conclusions

The incentive program builds up a partnership relationship between the employees and the employers, resulting in more income for the employee and higher productivity for the company. In order for the program to be really efficient, it is necessary to establish targets that can be met, with employee involvement in the conceptualization and operation of the program, boosting employee motivation and commitment to the objectives established by the management. It is noted that Brazilian entrepreneurs, particularly in the chemical segment, do not implement incentive programs merely in order to comply with the Law, but rather to retain a staff of well-motivated employees, striving for gains in productivity with a keener competitive edge on their markets. Implementation of employee incentive programs were based on the following corporate objectives: 69.1% wished to boost the productivity of the labor force; 65.5% wished to upgrade product quality; and 58.2% wished to cut production costs.

One of the intermediate objectives of the survey was to check the use of Economic Value Added (EVA^{TM}) methodology for setting the incentive program targets. Only 24.5% of the companies surveyed affirmed that they use this methodology. Unfortunately, a very small number of companies using the EVA^{TM} were noted. According to the theory researched (Young & O'Byrne (2001); Stewart (1999)), the EVA^{TM} is rated as a powerful tool for creating sustainable incentives for the business units, helping align the remuneration of managers and employees while creating value for the shareholder. One of the stumbling-blocks preventing the adoption of the EVA^{TM} may be a lack of awareness of the real cost of invested company capital, and worse still, many companies mistakenly believe that their own capital has no cost, hampering the use of the EVA^{TM}. It is noted through the research data that companies perceive the improvement in the operating performance after the implementation and operation of the incentive program, with the main findings as follows: 82.7% of the companies perceived improvements in product quality; 79.1% of the companies perceived increases in productivity; 73.6% of the companies perceived a reduction in production costs; 49.1% of the companies perceived an

expansion in their market share; 80.0% of the companies perceived that they were profitable or posted a good financial performance during the functioning of the incentive program; 62.7% of the companies noted a reduction in the plant accident rates. These data clearly indicate the importance of employee involvement in the functioning of the program, as an element of crucial importance for the entire process. It is well known that surveys discover that the Profits or Earnings-Sharing Schemes or Gain-Sharing Programs help boost corporate productivity and endow companies with a keener competitive edge through encouraging greater interest among the employees.

Moreover, through the Probit analysis together with the Chi Square analysis, the survey findings indicate the factors that affect the improvement in the operating performance as perceived by the managers, The operating performance is represented by the following variables: improvement in quality, higher productivity, production process upgrades, lower production costs and average bonus payment rate, which is influenced by the performance of the incentive program itself. Consequently, the hypothesis that incentive programs have positive effects on corporate operating performances is confirmed, although not all the factors or independent variables actually influence this operating performance.

The survey findings suggest that the managers or administrators should really strive to discover the factors that could influence the corporate operating performance through the functioning of incentive programs in Brazil, such as Profits or Earnings-Sharing Schemes and Gain-Sharing Programs. As noted, because these programs are not implemented merely to comply with the Law, or even to ease pressures from trade unions, the management should take steps to ensure that the implementation and operation of Profits or Earnings-Sharing Schemes or Gain-Sharing Programs are advantageous for the company, running them in an intelligent manner and striving for full employee involvement with the targets or objectives set by the organization, and consequently upgrading the corporate operating performance.

This survey is limited to the companies in our sample, with these general remarks limited to this organizational environment. Moreover, following in the footsteps of the Kim study (1996), the Probit model adopted is subject to constraints that may be minimized by the use of the Logit model. However, the combination of the association analysis with the Probit analysis confirmed the findings to a significant extent. Additionally, the dependent variables may be handled not according to the perception of the manager but according to the performance measured by the companies - which reduces the distortion that is naturally included when assessing personal perceptions. Additionally, studies could be carried out that produce mathematical models allowing the managers to identify in advance programs with high risks of failure, allowing them to intervene in their structure in good time.

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