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The Use of an Incentive System to Increase Worker Performance in a Financial Setting

Steven S. Armstrong
Western Michigan University

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THE USE OF AN INCENTIVE SYSTEM TO INCREASE WORKER PERFORMANCE IN A FINANCIAL SETTING

by

Steven S. Armstrong

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Doctor of Philosophy
Department of Psychology

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THE USE OF AN INCENTIVE SYSTEM TO INCREASE WORKER PERFORMANCE IN A FINANCIAL SETTING

Steven S. Armstrong, Ph.D.
Western Michigan University, 1985

The use of merchandise as a consequence in a performance based incentive system was assessed in a financial setting. Points were earned by each subject based on individual daily performance. These points were collected by each subject and used toward the purchase of merchandise. A multiple baseline across two groups of bank tellers showed substantial increases in worker behavior after the onset of contingent points. Differences between groups existed and an analysis is provided. Follow-up data revealed sustained performance and a cost-benefit analysis demonstrated substantial savings.
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THE USE OF AN INCENTIVE SYSTEM TO INCREASE WORKER PERFORMANCE IN A FINANCIAL SETTING

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I wish to recognize the following individuals for assisting in this project. From the business community, thanks go to John Gaetani and Dr. Douglas Hoxeng without whom none of this would have been possible as they provided the setting, finances, information, and support to make this project a reality. The knowledge and experience gained through my interactions with these two individuals at strategic planning meetings and other corporate endeavors are irreplaceable. In addition, I would like to thank Dr. William Abernathy of Productivity Development Systems for the software and guidance concerning incentive systems. These three individuals and their staff made my corporate experience a very positive one.

From the academic community, I would like to thank my committee members. Specifically, to Dr. Michael Moskovis for his comments during discussions about the project and for providing me a look at the degree of dedication required to be a Vice President of a large university. To Dr. David Lyon, for his financial support and for providing an outstanding administrative role model during undoubtedly difficult times. To Dr. Richard Malott, for developing my analytical abilities and self-management skills that were not only necessary for the completion of this project, but will be with me for life. Finally, to Dr. Norman Peterson, who has been not only an outstanding advisor, but is responsible for virtually all of my industrially-oriented skills. Moreover, he has been a friend that
has always been on my side (even when my side may not have been such a great place to be), and an excellent role model—dedicated to the application of the philosophy of behaviorism to industry.

In my letter of application to the graduate program, I stated that I was looking forward to interacting with individuals recognized for excellence in their respective areas. I couldn't have been more fortunate.

Additional thanks go to Margi Walters for typing and preparation and to Lisa Dalton of Science Graphics for the figure graphics.

Finally, I would like to thank my parents, W. Scott and Suzanne Armstrong, my brother, Rob, and my grandfather, G. P. Shelby, for their support, financial and otherwise. It's always been nice to know that in their eyes it was all right to still be in school. For this reason, I dedicate this paper to them.

Steven S. Armstrong
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INTRODUCTION

Pay for performance (PFP) systems (e.g., incentive systems, merit pay) have a lengthy history. The first systematic study using financial compensation as a motivating tool is credited to Fredrick Taylor around 1900 (Opsahal and Dunnette, 1966). His plan was to increase profits by lowering his fixed costs (hourly pay) and linking pay to performance as opposed to time. This thematic line of research is referred to as the birth of scientific management.

This birth has lead to an increase in PFP systems as evidenced primarily in two ways. The first is an increasing number of articles, concerning financial compensation, occurring in journals such as Personnel and Personnel Journal. Additionally, traditional industrial journals, such as Personnel Administrator, are devoting entire issues to this topic. The second recent development indicating their growing use is the number of organizations that have such systems. Currently, an overwhelming majority of organizations in the industrial area utilize some form of PFP system (Levine, 1983).

Although PFP systems are becoming more widely represented both in the workplace and the literature, most of the articles written about the role of financial compensation are descriptive. Two factors may be responsible for this. First, those individuals who successfully establish such systems are being paid to do so and are not being paid to write application-oriented articles. Second,
corporations generally do not write experimental articles that may lead to replication by a competitor; however, descriptive articles containing recommendations may be viewed as safe and adding to the corporations' visibility.

Within the available descriptive literature, many PFP system recommendations exist. Of the literature reviewed, two recommendations were most common. First, developing better defined job standards for use with the performance appraisal must be developed (Hill, 1979; Kopelman, 1983; Lawler, 1981; Mandt, 1984; Meyer, 1975; O'Toole, 1982; Silverman, 1983; Winstanley, 1980). Second, improved performance criteria should be developed, even if they are not necessarily used with a performance appraisal (Brinks, 1981; Farmer, 1978; Kopelman & Reinhart, 1982; Lawler, 1981; Marshall, 1975; Pajer, 1984; Patten, 1977; Scott & Cotter, 1984; Winstanley, 1982). In most organizations PFP is based on the corporate performance appraisal, and, therefore, one of the most critical factors becomes the degree to which we adequately measure performance.

Because few applied examples of PFP systems exist in the literature, an overview of what has been successful in the past to increase performance is important. Two manipulations in particular, with respect to industry, have been successful in improving productivity. The first has to do with antecedent control. Goal setting and information about the topography of the task are the two most common forms of antecedent control that have produced increases in productivity (Blumenfield & Leidy, 1979; Dockstrader, 1979;
Ivancevich, 1976; Kraft & Williams, 1975; Latham & Bales, 1975; Latham & Yukl, 1975; Rush, 1971; Warren, 1978). The second manipulation involves the use of consequences. Both non-financial and financial consequences have been used. The most common non-financial types have been feedback (Adam, 1975; Chandler, 1977; Dick, 1978; Weitz, Antoneth & Wallace, 1954; Yukl & Latham, 1975) or time off (Burroughs & Richardson, 1975). The financial consequences have been primarily in the form of money delivered on a variable schedule such as a lottery (Locke, Feren, McCaleb, Shan & Denny, 1980; Pedalino & Gamboa, 1974; Pritchard, Leonard, Von Bergen & Kirk 1976; Toppen, 1963, 1965a, 1965b, 1966; Yukl, Wexley & Seymore, 1972) or on an annual basis such as a bonus (Futrell, 1975).

Not only have antecedents and consequences been used independently, but their combined use in the form of an intervention package is well represented in the literature. Kim and Hamner (1976) used both goal setting and feedback to improve the service ratings, cost performance, and safety of blue-collar telephone company employers. Similarly, Latham and Kinne (1974) used both goal setting and feedback to improve the productivity and attendance of members of logging crews. Finally, Wexley and Nemeroff (1975) reduced absenteeism and improved employee interactions through role playing and feedback with hospital staff.

The present study attempts to utilize both antecedent and consequent control, by increasing the specificity of the task (antecedent), and by awarding points that may be used to purchase merchandise contingent on individual productivity (consequence).
There are three major goals of the present study. First, white-collar productivity has been a recent focus in the Organizational Behavior Management (OBM) literature (Brand, Staelin, O'Brien & Dickinson, 1983; Mirman, 1982), and the present study is an attempt to add to this literature. The second goal was to increase the performance of the subjects involved. The final goal is to add to the literature an applied example of a PFP system, based on the recommendations from the literature and the techniques used in the OBM area.
CHAPTER II

METHOD

Subjects and Setting

The subjects consisted of 23 bank tellers (4 males, 19 females) in a large midwest bank. Their tasks were almost exclusively repetitive function (e.g., processing automatic teller machine deposits) and all had a minimum of 9 months experience. Participation in the incentive program was mandatory.

Dependent Variable

The dependent measure was the individual subject's daily percent of goal. This measure was calculated, recorded, and graphed daily by each subject. In order for such a calculation to be made, the following process was required.

Job Analysis

The job analysis consisted of a series of observations and interviews of the subjects by the experimenter. The goal was to identify all outputs that were critical to the job. For example, processing incoming securities was a key output; replacing a tape in a machine was not. A total of 31 outputs were defined. Each was given an output identification number.
Sample Data Collection

For each output the subject recorded the amount of time (in minutes) spent on a particular output and the number of outputs generated. This was recorded on a data sheet provided by the experimenter. Appendix A shows a sample data sheet.

Establishing the goals (credits)

Based on the data recorded by the subjects, credits or goals were established using Computer Assisted Performance Analysis (CAPA). CAPA is a software program designed by Performance Development Systems (PDS), which computes a mean time per output and establishes a goal based on the top 15% of the performances. Each output had a different credit value and the program was designed to attempt to move the lower 85% of the performances toward that top 15%.

Computing Total Credits

The total credits earned is the product of the number of outputs completed and the subjects multiplied the total count for a particular output X the established credit value for each output. For example, if a subject completed 30 outputs with an established credit value of 2.8274, the total credits earned for that day (for that output) was 84.822. A complete example is shown in Appendix B.
Computing Total Time

To minimize the amount of data the subjects were required to record, an established time of 420 minutes a day was used by each employee. This measure reflected an eight-hour work day with 30 minutes for lunch and two 15 minute breaks. Occasionally, a circumstance arose which prohibited the individual from working a 420-minute day. For example, if a staff meeting was conducted, the time the meeting required (in minutes) was subtracted from 420 by the supervisor and a new established time was issued and used by all subjects.

Computing Total Daily Credits Earned

The total credits was the sum of credits earned for each output.

Computing Daily Percent of Goal

The dependent measure of daily percent of goal was computed by dividing the total credits earned by the total minutes worked. Appendix B provides an example of the daily performance record filled out by the subject to arrive at the daily percent of goal.

Experimental Conditions

Phase A was a feedback phase in which feedback was presented both verbally by the supervisors and visually from the subjects graphs of their daily percent of goal. A meeting was conducted by
the experimenter the supervisors instructing them about types of comments that should be made based on the subject's daily performance graph. Appendix C represents a copy of the written materials provided by the experimenter which served as the agenda for the meeting. The second form of feedback was the graph that was maintained by the subject. This was not publically posted and was checked daily by the supervisor. Appendix A sample graph is presented in Appendix D, the daily percent of goal graph.

Phase B was the merchandise phase of the program. Points were earned by the subjects based on their daily percent of goal. To calculate the number of points earned, the subjects compared their daily percent of goal to a points scale provided by the experimenter. Appendix E is an example of the new daily performance record that allowed the subject to calculate their daily points earned. Appendix F shows the scale used. The points scale started at 66% of goal (equal to 2 points) and continued in a "J" fashion (power = 1.5) to 100% of goal (equal to 400 points). One hundred percent of goal was equal to the top 15% of the performances and each point was equal to one-half cent.

Each subject's daily points earned were recorded by the supervisor and a points check was presented every two weeks along with the subject's regular pay check. The subjects could then use these points toward the purchase of merchandise from the catalog provided to the employee.
Reliability

Because of the verifiability of the data, reliability checks were not a consideration. The bank kept a ledger of the number of outputs processed and in the first few weeks the supervisors checked daily the number of outputs recorded. Having found no errors, this procedure was terminated. The supervisor reported less than one clerical error a week for all subjects.

Design

The subjects were divided into two groups based on department. There were 19 subjects in Group I (2 males, 17 females) and 4 subjects in Group II (2 males, 2 females). Although they were in different departments, their tasks were similar, but not interdependent. Group I had 17 outputs. Group II had 14 outputs. A multiple baseline across groups was used by delaying the introduction of the merchandise phase for Group II. The feedback phase for both groups was conducted for 4 weeks. The merchandise phase for Group I was 19 weeks long and for Group II was 6 weeks in length. The merchandise phase for both groups includes two weeks of follow-up data. These data were collected ten weeks after the last merchandise phase point in each group.
CHAPTER III
RESULTS AND DISCUSSION

The results for both groups are presented in Figure 1. For both groups the merchandise incentive increased the weekly mean percent of goal. For Group I, the weekly mean percent of goal increased from 57.4% during the feedback phase to 78.8% during the merchandise phase. For Group II, the feedback phase mean was 52.2% and increased to 90.5% during the merchandise phase. The follow-up data are also present in Figure 1 at the break in graph lines. For Group I, the mean during this two-week period increased to 92.5% and for Group II the mean was 88%, showing little change.

Individual data are presented in Figure 2 for the highest and lowest performers during the feedback phase. For Group I, the highest performer during the feedback phase had a mean percent of goal of 102.8%. For the same person during the merchandise phase, the mean was 102% and the ten-week follow-up mean was 124.2%. For the same group, the lowest performer had a feedback phase mean of 21.8%, a merchandise phase mean of 51.3%, and a follow-up mean of 56.9%. For group II, the highest performer during the feedback phase had a mean percent of goal of 58.9%. For the same person, during the merchandise phase the mean was 79.2% and the ten week
Figure 1. Group mean percent of goal

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Figure 2. Individual performance mean percent of goal

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follow-up mean was 89%. For the same group, the lowest performer had a feedback phase mean of 47.8%, a merchandise phase mean of 98.4%, and a follow-up mean of 94.5%.

Social Validation

A social validation survey (Wolf, 1978) was developed and administered to the four managers of the subjects involved. They were not part of the incentive system and were told that their comments would be kept anonymous. Table 1 shows the results of the survey.

A second survey was developed and administered to the subjects. They were also told that their comments would be kept anonymous. Table 2 shows the results of the survey.
<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you satisfied with the goals of the program?</td>
<td>3 of 4: yes</td>
<td>May want to look at additional outputs</td>
</tr>
<tr>
<td>Are you satisfied with the method by which credits are established and data are collected?</td>
<td>4 of 4: yes</td>
<td>None</td>
</tr>
<tr>
<td>Are you satisfied with the results of the program?</td>
<td>4 of 4: yes</td>
<td>None</td>
</tr>
<tr>
<td>Best features of the system?</td>
<td></td>
<td>Increased in teamwork and motivation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provided management with current productivity results</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduced in unit cost</td>
</tr>
<tr>
<td>Worst features?</td>
<td></td>
<td>Large amount of record keeping and paperwork</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concern about novelty of points wearing off?</td>
</tr>
<tr>
<td>Additional Comments?</td>
<td></td>
<td>Wish cash were involved</td>
</tr>
<tr>
<td>Item</td>
<td>Group I (N=19)</td>
<td>Group II (N=5)</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>1. When I first started the program, I did not think it would work.</td>
<td>86% agree</td>
<td>40% agree</td>
</tr>
<tr>
<td>2. My supervisor has been helpful in my understanding of this incentive program.</td>
<td>95% agree</td>
<td>100% agree</td>
</tr>
<tr>
<td>3. When the program first started, there were part I did not understand.</td>
<td>86% agree</td>
<td>100% agree</td>
</tr>
<tr>
<td>4. I had heard about the incentive program before our group started it.</td>
<td>14% agree</td>
<td>80% agree</td>
</tr>
<tr>
<td>5. I think the program is fair.</td>
<td>70% agree</td>
<td>60% agree</td>
</tr>
<tr>
<td>6. I wish the program would be terminated.</td>
<td>38% agree</td>
<td>40% agree</td>
</tr>
<tr>
<td>7. I wish we would have had this program for years.</td>
<td>29% agree</td>
<td>40% agree</td>
</tr>
<tr>
<td>8. The credit values that have been established for my outputs are generally accurate.</td>
<td>90% agree</td>
<td>80% agree</td>
</tr>
<tr>
<td>9. I wish I would have had more input into the development of the program.</td>
<td>32% agree</td>
<td>20% agree</td>
</tr>
</tbody>
</table>

(table continues)
<table>
<thead>
<tr>
<th>Item</th>
<th>Group I (N=19)</th>
<th>Group II (N=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. When we first started the program, I found the paperwork (data collection) to be a pain.</td>
<td>95% agree</td>
<td>80% agree</td>
</tr>
<tr>
<td>11. Now that we are in the merchandise phase of the program, I don't find the paperwork to be so bad.</td>
<td>48% agree</td>
<td>60% agree</td>
</tr>
<tr>
<td>12. Although I haven't gotten any merchandise yet, I know I will.</td>
<td>65% agree</td>
<td>60% agree</td>
</tr>
<tr>
<td>13. There is nothing in the merchandise catalog that I want.</td>
<td>10% agree</td>
<td>40% agree</td>
</tr>
<tr>
<td>14. I wish I was earning more points.</td>
<td>90% agree</td>
<td>60% agree</td>
</tr>
<tr>
<td>15. When the incentive points first began, I was not interested in the program.</td>
<td>81% agree</td>
<td>80% agree</td>
</tr>
<tr>
<td>16. Now that I am in the points part of the program, I am much more interested in the program.</td>
<td>62% agree</td>
<td>40% agree</td>
</tr>
<tr>
<td>17. I learned much more about the program once the points phase began.</td>
<td>81% agree</td>
<td>80% agree</td>
</tr>
<tr>
<td>18. Even after I started to earn points, I still did not believe in the program.</td>
<td>24% agree</td>
<td>40% agree</td>
</tr>
</tbody>
</table>

(table continues)
<table>
<thead>
<tr>
<th>Item</th>
<th>Group I (N=19)</th>
<th>Group II (N=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. As soon as the merchandise phase began, I found myself working</td>
<td>14% agree</td>
<td>40% agree</td>
</tr>
<tr>
<td>hard.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. As a group, I think we like the program.</td>
<td>53% agree</td>
<td>20% agree</td>
</tr>
<tr>
<td>21. Too many points are required to buy the merchandise I want.</td>
<td>95% agree</td>
<td>80% agree</td>
</tr>
<tr>
<td>22. It takes too long to earn the points needed to buy any</td>
<td>52% agree</td>
<td>60% agree</td>
</tr>
<tr>
<td>merchandise.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The merchandise phase of the program produced a substantial increase in the mean percent of goal. For all subjects, points leading to the purchase of merchandise improved performance.

Although both groups had a substantial increase in performance, Group II showed an immediate increase while Group I had a much more gradual increase. It is probably not the case that the points were any less rewarding for Group I than Group II, but that the groups had differing attitudes about the program. After the data for this study were analyzed the survey was conducted with the subjects of the study. The questionnaire attempted to address this issue of differing attitudes. The survey consisted of 22 statements about the incentive program. The response choices were 1 = agree, 2 = agree with reservations, 3 = disagree. Both surveys were conducted one week after the follow-up data were collected. For Group I, 14% of the subjects reported prior knowledge about the program, whereas in Group II, 80% of the subjects reported having heard about the program (item #4). Not only did Group II subjects have prior knowledge, but they reported having a more favorable opinion about the program than Group I. This is indicated by the fact that 86% of the subjects in Group I thought that, when the program first started, it would fail as compared to only 40% expecting failure in Group II (item #1). However, after the program started, both groups indicated having a positive attitude about the program by responding favorably to item #18. This item assesses the believability of the
program by stating, "even after I started to earn points, I still did not believe in the program." Only 24% of Group I and 40% of Group II agreed with this statement.

These results are important, but not entirely surprising. One would expect the subjects in Group II to have heard about the program because both groups of subjects spent the majority of breaktime together during which the incentive program was probably discussed. The very pessimistic attitude held by Group I about the program is probably due to a history of personnel-related projects that had been conducted with these subjects, the majority of which had not been received well. The less pessimistic attitude of Group II is probably a result of talking to Group I subjects about the program and discovering that it really was a win-win situation. In addition, Group II had the benefit of knowing that the program was a lasting one, because it had remained in effect in Group I for over three months.

Another interesting finding is that although the data clearly show that the subjects increased their productivity, they did not report feeling as though they were working harder (item #19). However, the subjects may have equated "working harder" with working faster and they may not have been working faster - but in fact working longer and spending more time on task.

In addition, the overwhelming majority of the subjects felt that the program was fair, as indicated by the responses the subjects gave to the statements concerning the accuracy of the credit values (item #8) and the fairness of the program (item #5).
Generally, they were quite satisfied with the accuracy of the credits (90% agree, Group I; 80% agree, Group II) and the fairness of the program (70% agree, Group I; 60% agree, Group II).

The negative comments about the system arose when the individual subjects had to comment on how the group as a whole felt about the program. Generally, the individual subjects' perception of how the group views the program is less than positive (items #20, #7). With both groups, the individual subjects feel that as a group they dislike the program. No clear explanations for these responses exist. However, it may be that it is acceptable, while in a group setting (e.g., lunchroom), to talk negatively about such programs. As a result of hearing negative comments while in a group setting, it may be that the individual develops the perception that the group does not like the program.

The negative comments were not limited to making statements about the group. While the majority of the subjects would like to have the program remain (62% Group I; 60% Group II), a surprising number of subjects would like to have it terminated (item #6). Again, no clear explanations exist. However, between weeks 21 and 31, both groups were informed of plans to relocate. This new setting would be a major inconvenience to the majority of the employees as it would require an additional 30-40 minute drive to work. Because of this, the subjects may have developed a general dissatisfaction for their jobs and certain items of the survey may have reflected this. In any respect, this aspect of the study should be further investigated.
The survey (Table 1) that was conducted with the four managers associated with the two groups of subjects revealed that the managers were generally pleased with the goals and results and thought that the program was fair. The only consistent criticism concerned the amount of paperwork involved.

One of the managers expressed a desire to have cash as the consequence instead of points leading to merchandise. The preliminary plan of the author and other bank employees was to utilize cash. However, the paymaster department reported that a cash-based system would overextend the current accounting staff. As a result, the merchandise phase of the program was adopted.

The issue of cash as opposed to merchandise as a consequence needs further investigation. Although the merchandise was desirable, perhaps cash would be a more effective consequence. Cash is more flexible in terms of what the subject can do with it, but it is not as novel as merchandise. Concerning long-term effects, unless the reinforcement menu (e.g., catalog) is varied or very extensive, cash would probably be a more effective consequence.

Cost Benefit

A cost benefit analysis demonstrates that as a result of the incentive program, a projected first-year savings of approximately $143,500 in labor costs should be achieved. The following steps were followed to arrive at the savings figure. First, a baserate cost per earned hour was established, by dividing the dollars paid labor (not including benefits) by earned hours (number of hours of
outputs produced at the goal rates). The baserate cost was established during the feedback phase. Second, the present cost per earned hour (based on the first 14 weeks of the merchandise phase for both groups) was subtracted from the baserate, yielding the change in the cost per earned hour. Third, the change in the cost per earned hour was multiplied by the number of earned hours, equaling the amount saved for 14 weeks. The previous set of calculations was computed for both groups and totalled to equal the benefit side of $150,000.

The costs were estimated to be $6,500 for the first year. Included in the figure are material costs ($500), merchandise costs ($2,000), and administrative costs ($4,000). As a result of an increase in performance and amount of incoming work, these costs were translated into off-budget dollars by avoiding the hiring of eight additional staff (J. Gaetani, personal communication, April 2, 1985).

Concerning the generalizability of this incentive program (or any incentive program) to either other organizations or other areas within this setting, the following factors must be considered. First, the rules of the program must be clear to everyone and consistently applied. This is the primary consideration when attempting to build trust in the system. (Based on the surveys conducted, trust in the program has a significant influence on the effects of the program.) Second, the worker's behavior must be adequately defined and measured (e.g., outputs). Third, the contingency between the worker's performance and the incentive must
be clear and consistent. Finally, a program for maintaining the system must be established. If all such factors exist in another setting or organization, the program should produce favorable results regardless of the types of subjects or duties involved.

Implications for future research

Several additional areas of research are in need of further consideration. The first involves a comparison between individual and group incentive programs both at a systems level and at a productivity level. At the system level, many corporations are in favor of attempting a PFP system and prefer group programs over individual programs (J. Gaetani, personal communication, March 8, 1985). However, this preference is not based on a belief that group programs are more effective than individual programs, but on the basis of ease in administration and maintenance (D. Hoxeng, personal communication, March 8, 1985). If individual programs are more difficult to administer, strategies to resolve this should be developed. At the productivity level, it is not at all clear if one incentive program (group vs. individual) is most effective, or under what conditions they operate best. This is a large and needed area of research.

Another area in need of further research is the effect of PFP systems on those who manage them. As a result of the increase in task definition and data collection, the traditional role of the manager is changing. Their role in the organization is becoming more proactive than reactive, and they will need different kinds of
skills in order to be effective in their new role. The types of skills required should be defined and methods of instruction developed.

Finally, contingencies must be developed to maintain the supervision of the system. Presently, no such contingencies have been arranged and although the system has remained in tact for eight months, in the absence of the experimenter the supervision may become sloppy. Two solutions for such maintenance are possible. First, arrange the supervision of the incentive system to become part of the managers performance appraisal. By doing such, the supervisor of the system now becomes a portion of the managers job responsibilities. Second, an incentive based on the success of the manager's department is a likely solution, but needs further evaluation in terms of what to base the incentive on.
Appendix A

INDIVIDUAL DAILY DATA LOG

EMPLOYEE NAME: ________________________  EMPLOYEE #: __________
UNIT: __________________________________ UNIT #: __________

<table>
<thead>
<tr>
<th>DATE</th>
<th>OUTPUT ID#</th>
<th>TIME</th>
<th>TOTAL COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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## Appendix B

### DAILY PERFORMANCE RECORD

<table>
<thead>
<tr>
<th>OUTPUT ID</th>
<th>PRODUCTION TIME (MINUTES WORKED)</th>
<th>TOTAL COUNT</th>
<th>CREDIT VALUE</th>
<th>TOTAL CREDIT</th>
<th>% of Goal</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>2.8274</td>
<td>84.822</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>44</td>
<td>3.5731</td>
<td>157.216</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>27</td>
<td>4.202</td>
<td>113.454</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL MINUTES WORKED** = 420

**TOTAL DAILY CREDIT** = 355.492

**TOTAL MINUTES WORKED** = \( \frac{420}{420} \) = 85%

<table>
<thead>
<tr>
<th>TOTAL MINUTES WORKED</th>
<th>TOTAL DAILY CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>420</td>
<td>355.492</td>
</tr>
</tbody>
</table>
Now that you have access to the daily percent of goal for each of your staff, how should the data be best put to use? Their data should be used in two ways. First, as a source of information for you, the supervisor, and how your people are performing. Second, their data should provide an opportunity for you to provide feedback to them about their performance.

To best demonstrate these two uses, let's look at some examples.

**Information:** A graph that looks like this is a supervisor's dream and should tell your whatever they are doing, have them keep doing it!

**Feedback:** All too often good performance goes unnoticed. Good performers need praise and recognition as much as deficient performers. Remember, when giving your feedback, keep it brief, try to give it immediately after the behavior, make it specific to that behavior (never just say, "Good Job"), do it on a regular basis, and keep it positive!

**Information:** Because this employee has never performed well, a graph like this denotes a likely training problem. Other things to
look for are: inadequate work flow (not enough opportunities to perform the task), punishing consequences for performing the task, and/or poor work methods.

**Feedback:** Break down the poor performers tasks into hourly periods. Look at their data at the end of each hour and discuss with them the results. Remember, when giving your feedback, keep it brief, try to give it immediately after the behavior (especially when this person is learning the task), keep your statements specific to the behavior, do it on a regular basis (keep the praise coming at a high rate while this person is learning the task), and above all keep it positive!

**Information:** A graph that looks like this is encouraging. This should tell you that while they are not yet performing up to 100% of goal, there has been a relative improvement.

**Feedback:** Follow all the rules previously stated making sure that your praise is relative to their performance improvement.

**Information:** If one your employees has a graph that looks like this, what is happening is a problem other than training. From their graph you can see that they (appendix continues)
once performed fairly well, but then something in their work
environment may have changed. Things to look for are: feedback
problems (do they know they are performing?), a change in the
consequences for completing their work (from positive to negative—or less positive consequences), equipment problems (lots of down
time?), has the work flow for their area dropped off?, or have they
changed the way in which they do the job?
Feedback: The first step for this types of situation should be to
observe what they are doing. Is there anything that you notice
right away that could be changed? Explain to them that you are
cconcerned about their performance and that you've noticed that it
has dropped off as of late. Ask them if anything has changed in
their work environment that would lead to such a decline, (such as
the above "things to look for" concerns). A most important note is
that once there is any increase in performance make sure you
recognize this and praise it!

Information: This graph
displays data that are variable.
While this appears to be strange,
don't be surprised, such
variability is quite common. Data
like this are indicative of two primary problems: (1) equipment
problems or (2) inconsistent work flow. In addition, look at the
staffing - overstaffing or understaffing may also cause this type of
(appendix continues)
data variability.

Feedback: A combination of all the aforementioned feedback solutions could be employed given performance of this type. In addition, ask the employee what was different on days with high or low points. They were the ones emitting (or not emitting) behavior, so ask for their opinion about why their graph displays such variability.

One of the most common causes of poor performance is a lack of performance feedback. One of the most consistent cures for poor performance is the systematic presentation of feedback. Now that you have systematic data about your employees performance, the presentation of such feedback is now possible.
# Appendix E

## Daily Performance Record

**Employee** | Joe Sample
---|---
**Unit** | 
**Employee ID#** | 1
**Unit ID#** | 
**Output ID** | **Production Time (Minutes Worked)** | **Total Count** | **Credit** | **Total Credit** |
---|---|---|---|---|
1 | 30 | 2.8274 | 84.822 |
2 | 41 | 3.5731 | 157.2164 |
3 | 27 | 4.202 | 113.454 |

**Total Daily Credit** = 355.49

**Total Minutes Worked** = 420

% of Goal = 85%

### Daily Points Computation

| Table Points | Production Time Bonus | Group Bonus | Total Daily Points |
---|---|---|---|
--- | X | --- | 173 |
--- | --- | --- | --- |
--- | = | = | 173 |

**Total Minutes Worked** = 420

**Total Daily Credit** = 355.492

**Total Daily Points** = 173
Appendix F

PERFORMANCE POINTS SCALE

<table>
<thead>
<tr>
<th>Daily % Goal</th>
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<th>Daily % Goal</th>
<th>Performance Points</th>
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BIBLIOGRAPHY


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