



Budgeting for Control

Author(s): Roger L. M. Dunbar

Source: *Administrative Science Quarterly*, Vol. 16, No. 1, Organizational Leadership (Mar., 1971), pp. 88-96

Published by: [Johnson Graduate School of Management, Cornell University](#)

Stable URL: <http://www.jstor.org/stable/2391292>

Accessed: 15/08/2011 11:44

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Johnson Graduate School of Management, Cornell University is collaborating with JSTOR to digitize, preserve and extend access to *Administrative Science Quarterly*.

<http://www.jstor.org>

Budgeting for Control

A budgetary control system is defined as a hierarchically linked combination of a goal-setting and a goal-achieving machine. The effects of four inputs to the goal-setting machine are discussed: (1) setting difficult as opposed to easy goals, (2) allowing the budgeted individual to participate in setting the goal, (3) providing financial reward for goal achievement, and (4) providing inadequate extrinsic reward for goal achievement.

Many writers have defined the principal purpose of a business as making profits (for example, Dill, 1965); however, other objectives may also be important such as the coordinating of separate parts of the organization and the development of new products. To achieve these various objectives, the behavior of organization members must be directed and, if necessary, restricted (Tannenbaum, 1968); in many large-scale businesses this control is effected by the budgetary system (Sord and Welsch, 1958).

The term, budget, has been used rather loosely and may refer to at least two methods of control: (1) a budget may be used as a part of the allocation process authorizing expenditures, the budgeted manager being required to restrict spending to this authorized level; or (2) it may be used to set specific organizational goals such as the increase of sales or the reduction of costs. It is the latter focus which is of interest here and an attempt will be made to integrate both laboratory and field research findings to describe how such a system may influence behavior.

THE BUDGETARY SYSTEM

With some notable exceptions such as Hofstede (1967) and Stedry (1960), attempts to understand how budgets control behavior have been rare. In this paper ideas derived from general systems theory are used to formulate the characteristics of a budgetary control system; then the implications of some empirical findings for this model are considered.

A system is a collection of interconnected

elements; and if it has a purpose, general systems theorists refer to it as a machine. Each machine can have only one goal; therefore, to obtain a multipurpose system, machines must be combined. In order to achieve its particular purpose, a machine must have a feedback mechanism to sense changes away from its goal and then make appropriate adjustments. The adjustive reaction may be positive in that progress is reinforced by a continual increase of the goal in the desired direction, or negative, in that deviations are inhibited and the machine is brought back to a preset goal.

Stedry (1960: 2) said the primary objective of budgeting "is to increase long-run profit at the fastest possible rate"; however, a second goal of the budget is to facilitate organizational coordination by providing an accurate forecast of future results. Therefore, an ideal budgetary system would consist of a machine to increase profit and another to facilitate coordination by accurately forecasting results.

In the present model, the elements of the machine to increase profit are assumed to appear primarily in the process of setting the budget goal, implying a positive feedback mechanism. On the other hand, the elements of the machine to facilitate coordination are assumed to appear primarily in the process of achieving the budget, implying a negative feedback mechanism. Since the goal-setting machine sets the goal for the goal-achieving machine, there is clearly a hierarchical link between the two machines.

Members of the goal-setting machine, who

may include the budget department, top management, and possibly the budgeted individuals themselves, must provide the positive feedback which will ensure the continual advancement of budget goals. The process whereby budget goals are set is here viewed as a black box. However, inputs to this goal-setting box can be isolated and then associated with performance outputs. Four inputs are considered: (1) whether goals set are difficult or easy to achieve; (2) whether the organization allows the budgeted individual to participate in the setting of the budget goal; (3) whether the organization provides monetary incentives for favorable performance relative to the budget; (4) whether the organization provides what the budgeted individual perceives as inadequate extrinsic rewards for favorable performance relative to the budget.

Goals must not only be set but also achieved. The critical step between the setting of a goal and its achievement is the acceptance of the goal by the goal-achieving machine, that is the budgeted individual. There is fairly convincing evidence that cognitively, human beings are negative feedback or homeostatic machines (Festinger, 1957; Brehm and Cohen, 1962). Therefore, it is assumed here, that if the budgeted individual can be persuaded to accept the budget goal, his homeostatic nature can be relied upon to achieve it, or to bring performance as close to it as the environment will allow.

GOAL DIFFICULTY AND PERFORMANCE

Stedry (1960) found that when subjects were given a budget goal of a specific number of correct solutions to a series of algebraic water-jar problems to be obtained within a fixed time period, those given a relatively low budget had significantly fewer solutions than those given a higher budget. Locke (1968) found that without exception, and in 12 separate studies, higher goals led to higher performance. Siegel and Fouraker (1960) found that in a bargaining situation, those subjects who had evidently been induced by the experimenter to adopt a high aspiration level negotiated contracts which were significantly more profitable (\$6.25)

than those with a lower level of aspiration (\$3.35). Finally, Likert (1967) noted that high-performing sales offices set higher goals than low-performing offices.

Hofstede (1967) hypothesized that while up to a certain level of difficulty, higher goals would be accepted with resulting improved performance, beyond that, the goal would be rejected and performance would decline. It is this possibility of goal rejection that makes a positive feedback mechanism necessary to ensure a controlled increase of the budget which can be accepted as feasible by the goal-achieving budgeted individual. Unfortunately, little is known about the critical level at which budget goals are likely to be rejected rather than accepted. Stedry and Kay (1966) set foremen normal (that is, achieved 50 percent of the time in the past) and difficult (that is, achieved 25 percent of the time in the past) goals on two different job measures. The difficult goals were associated with either very good or very bad performance. Interviews indicated that good performance resulted when the foreman thought the goals challenging, but bad performance resulted when they thought them impossible.

Stedry (1962), in the water-jar experiment mentioned, distinguished three levels of goal difficulty and found that acceptance was not linearly dependent on difficulty, as Table 1 shows. However, when harder goals were set, Table 1 also shows that the probability that subjects set still higher goals declines. These studies by Stedry and Kay (1966) and Stedry (1962) might indicate that to increase profit and obtain predictable results, the positive feedback mecha-

TABLE 1. PROBABILITIES OF ACHIEVING AND ACCEPTING DIFFERENT LEVELS OF GOAL DIFFICULTY (STEDRY, 1962)

	Level of goal difficulty		
	Low	Medium	High
Probability of achieving goal	.69	.59	.39
Probability of accepting goal	.64	.53	.62
Probability of setting a higher goal	.25	.14	.00

nism could be designed to set goals that can be achieved, based on past performance, not more than 40 percent of the time but more than 25 percent of the time.

If goals are too difficult, the performance of the goal-achieving machine will not always reach the planned level, and it will be necessary to trade off the costs and benefits of more profit for more coordination difficulties, as shown in Figure 1. The goal is shown as increasingly difficult, but actual performance in terms of profit increases at a slower rate up until the point where the goal is rejected, then it falls off rapidly. Also, as the goal is increased, the discrepancy between planned and achieved performance increases, leading to an increase in coordination costs and a consequent reduction in profits.

PARTICIPATION IN GOAL SETTING

The organization may allow the budgeted individual to be incorporated into the goal-setting machine. Such participation has consequences for goal setting, goal acceptance, and performance. Vroom (1964), after citing a number of empirical studies, concluded that as subordinates were given a larger influence in decisions, their performance improved, partly because of the ego involvement which participation generated. In a budgetary context this may be interpreted to mean a greater willingness by budgeted individuals to accept the budget goal; with a difficult goal, this acceptance would be likely to result in improved performance.

Participation may also bring responsibilities the budgeted individual was not previously aware of to his attention. Hofstede (1967) found that participation was associated with the relevance of financial standards, but not technical standards. First-line managers had considered technical standards their responsibility but not financial performance, until participation in the setting of financial budgets made financial standards relevant.

However unless participation involves the setting of specific goals after discussion, there is little effect on performance. Lawrence and Smith (1955) introduced group discussion into four industrial work groups. Although there was a slight improvement in

the performance of the two groups which did not set goals, production increased very significantly in the other two groups which had set objectives after the discussion.

The timing of goal determination in the participation process may be important. Stedry (1960) found that subjects given a very difficult goal and then asked to specify their personal level of aspiration performed significantly better than subjects asked to specify their levels of aspiration and afterwards given a very difficult goal. He estimated the difference in performance to be equivalent to six standard deviations. He suggested that the first group formulated their level of aspiration with the high budget in mind, but the second group rejected the difficult goal because they could not reconcile it with their already specified aspiration level.

Hofstede (1967) also expected participation to help ensure a perception among budgeted individuals that goals were fair, and therefore the budget would be more relevant to them. However, the association between responses to a question on whether the goal setting took account of special problems and the relevance of the budget was not significant. Stedry (1962) found no association between perceptions of how accurate budget setting had been and performance.

Vroom (1960) hypothesized that participation and personality characteristics will interact to affect performance. He found that for persons with a high need for independence, the extent of their psychological participation in decision making was significantly associated ($r = .31$) with their performance, but not significant for those with medium or low independence needs. He found similar high associations for persons with moderate ($r = .38$) and low ($r = .33$) authoritarian scores, but no significant correlation for those with a high authoritarian need. When he partialled out the effects of age, education, and occupational level, the differences between the correlations attributable to the personality variables generally increased.

Hofstede (1967), using a slightly different measure of authoritarianism, obtained even more significant results in a budgetary con-

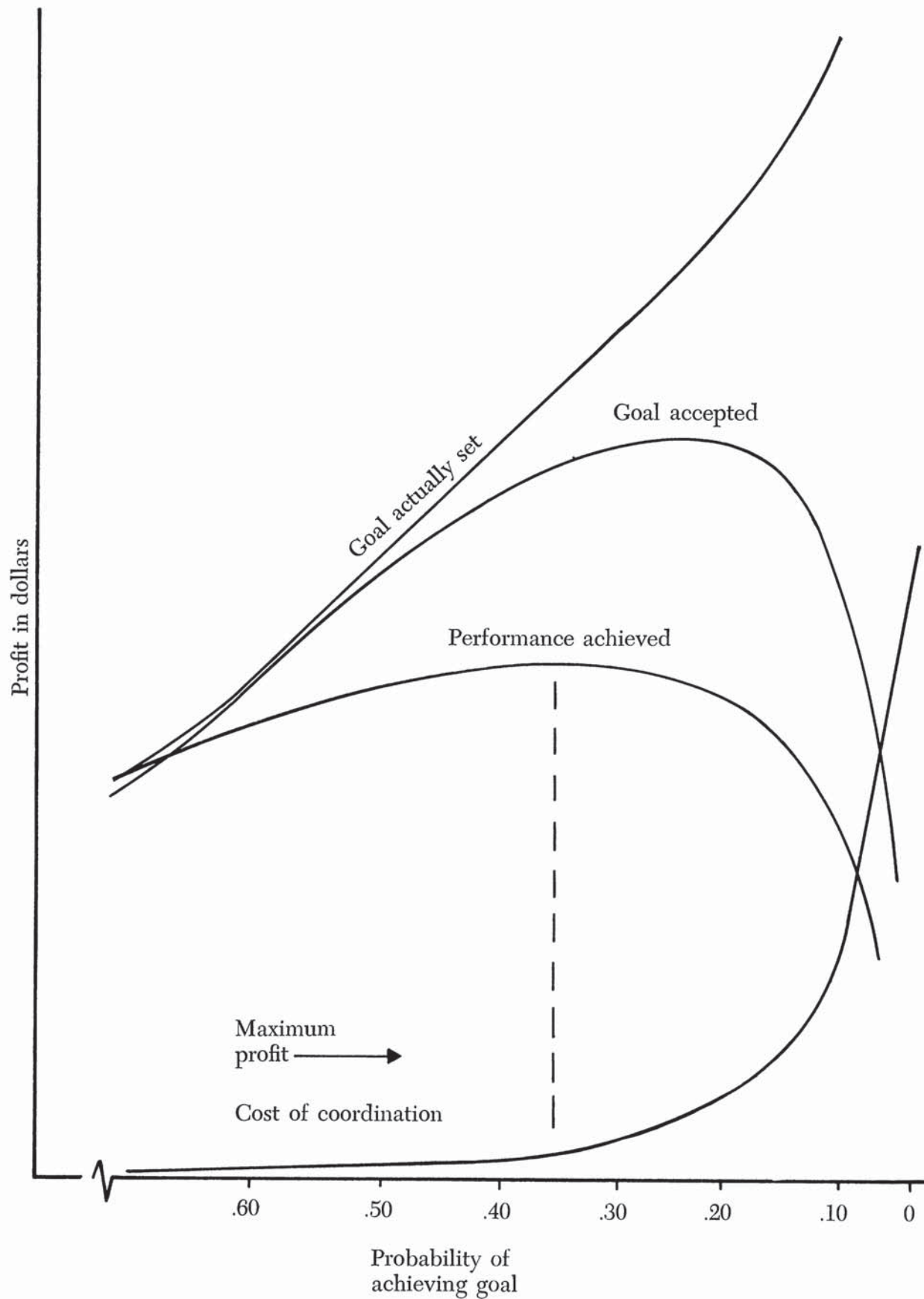


FIGURE 1. TRADE-OFF BETWEEN HARDER GOALS, PERFORMANCE, AND COORDINATION COSTS

text. After dividing managers into low, medium, and high authoritarians, he obtained correlations of .76, .64, and .47, respectively, between participation in goal setting and the budget's perceived relevance to performance. Probably Hofstede's (1967) correlations were much higher than Vroom's (1960) because Vroom associated participation with actual performance as assessed by the superior, whereas Hofstede associated participation with the relevance of the budget as perceived by the budgeted individual. In Vroom's (1960) analysis, goal acceptance intervened between the setting of the goal and performance. Nevertheless, both studies indicate that personality factors have consequences for the influence of participation on performance, and may, according to Hofstede's (1967) results, determine whether the budgeted individual will accept the budget.

In summary, discussions have little effect on performance unless coupled with goal setting. Participation may ensure that goals are not advanced so rapidly that they cannot be accepted by the budgeted individual, and the ego involvement produced by discussion, together with the timing of goal determination, may lead to greater goal acceptance. The extent of goal acceptance as a result of participation is probably affected by personality characteristics such as authoritarianism and dependence.

MONETARY INCENTIVES AND GOAL SETTING

Stedry (1960: 19), referring to cost goals and cost performance, hypothesized "that management can increase the tendency of the department head to aim at or below this goal by increasing the positive reward associated with its attainment and/or increasing the negative reward associated with its non-attainment." Similarly, Rath (1960: 172), a management consultant, concluded from "personal observation in hundreds of plants" that there is no motivational force as powerful as a wage system which related individual earnings directly to output "by means of a formula linking performance to a predetermined standard."

Toppen (1965a, 1965b) provided fairly

convincing evidence in an experiment that subjects performed a very routine task faster, at least in the short run, if offered monetary incentives. In one experiment, the number of pulls on a manipulandum by subjects paid at the rate of 25 cents was significantly greater than the number by those paid at the rate of 1 cent. In another experiment, subjects paid by piece rate had a significantly greater output than subjects paid a fixed amount, irrespective of output.

Locke *et al.* (1968) argued that monetary incentives would only affect performance to the extent that the rewards persuaded the subject to set higher goals for himself. In an experimental task requiring subjects to list as many uses as possible for a common object—for example, a cardboard box—subjects were either assigned difficult goals, allowed to set their own goals, or else not required to set any goals. No significant difference in performance was found between subjects who were rewarded and those who were not; but subjects assigned higher goals showed a significantly greater improvement than those assigned lower goals. Locke *et al.* (1968) concluded that differences in goal difficulty dominated any direct effects of monetary incentives.

In another experiment Locke *et al.* (1968) showed that monetary incentives resulted in the setting of less difficult goals, if this was perceived as a way of increasing income. In a word-unscrambling task, subjects could choose the word length, but were paid according to whether they successfully unscrambled a word, irrespective of length. As the level of incentive pay increased, subjects set goals, that is, recorded intentions of decreasing word length, and also chose shorter words to unscramble. A significant association was found between incentive and intentions, but when the effect of intentions was partialled out, no relation was found between incentive and choice. This finding suggests that monetary incentives directly affect goal setting, and then the subject behaves in such a way as to achieve the goal he has set.

The Locke *et al.* (1968) experiment also emphasized that monetary incentives may encourage subjects to set less difficult goals,

and since goal levels affect performance, higher monetary incentives may be associated with lower performance. This is not the association usually assumed in the literature. Like Georgopoulos *et al.* (1957: 346), most writers have assumed that "It is doubtful whether many people see low productivity as helping the achievement of many of their goals." Yet if rewards are strictly contingent on goal achievement, then lowering goals allows the rewards to be obtained more easily, and therefore may result in lower performance.

Top management may be aware of this potential link between incentives and lower performance, for it is almost universally accepted that information about pay and salary assessment should be kept secret (Lawler, 1967). Such secrecy allows the link between lower performance and either higher income or the same income for less effort to be hidden, but it also fosters the opposite belief, that higher performance is associated with higher income. Georgopoulos *et al.* (1957) collected questionnaire information from a population of incentive workers, nearly half of whom had had less than a year's experience on the job and found that 62 percent felt that high productivity reduced their earnings in the long run, and 64 percent felt that low productivity did also. Evidently, most workers saw the link between income and performance quite clearly. As long as income depended on performance relative to standards, and standards could be adjusted so that take-home pay was within an appropriate range, higher performance could result in increased goals; to avoid such punishment for high performance, less ambitious goals could be set, thus lowering performance.

Monetary incentives, therefore, do affect goal setting which in turn affects performance. If budgeted individuals set their own goals, they will set them so that their personal income is increased. When payment depends strictly on goal achievement, budgeted individuals will reduce their goals and therefore performance. Only if incentive payments depend on some direct measure of performance, rather than on a relative performance standard, are difficult goals likely to be set and performance improve.

INADEQUATE EXTRINSIC REWARD AND GOAL SETTING

Hypotheses derived from Festinger's (1957) theory of cognitive dissonance suggest that when an individual chooses to carry out an activity for which he will receive inadequate reward from his environment, he will increase the effort he invests in the activity. As a result, the person's performance may improve, allowing the attainment of personal rewards from significant achievements. This sense of personal achievement substitutes for the original inadequate environmental reward and reassures the person that his original decision to engage in the activity was justified. Specifically, Weick (1966) held that inadequate environmental reward for performance will lead a subject to focus on his own inputs and shift the responsibility for his behavior from an external to an internal source. If a suitable dissonant cognition could be created with respect to budgeting, goal setting and hence performance might improve.

Hofstede (1967) recognized this possibility, though not the link with dissonance theory. His thesis was that budgeted individuals, not top management, should regard budgeting as a game. Such a perception is certainly in contrast to arguments that budgeting is an important element of organizational control and that extrinsic rewards, specific and implicit, should depend on budget achievement. To create cognitive dissonance, extrinsic rewards would not be dependent on goal achievement, and for maximum dissonance, the organization would allow managers to work without budgets if they wished. Then the reason for having a budget, that it was needed to facilitate organizational control, would be removed. To resolve the dissonance of choosing to commit himself to a budget in such a situation, a manager would have to wish to obtain the sense of individual achievement which comes from meeting a goal, rather than because of any extrinsic rewards provided by top management.

Two laboratory experiments provide some insight into how cognitive dissonance might affect budget performance. Stedry (1962) found a significant negative association between performance and subjects' beliefs that

high monetary rewards would make them work harder. He also found a significant positive association between performance and the enjoyment obtained from the inherent challenge in the task, in contrast to the satisfaction of earning money. Stedry (1962) explained these results as due to subjects' differential financial needs and differential abilities to do the experimental problems. However, since the experimental task was presented to subjects (Stedry, 1962: 61), "as a game in order to avoid possible anti-mathematical blocks associated with problems in algebra," an alternative explanation might be that subjects who accepted the experimental task as a game then sought to overcome challenging goals, whereas those who saw achievement of the goal as a means to earn money did not perform as well.

Weick (1964: 534) asked students to take part in a "study of problem-solving to receive credit toward fulfilling a course requirement." The experimental task required subjects to identify, by means of cues, a concept chosen by the experimenter. Subjects were asked to set time goals and to identify the concept as quickly as possible with as few cues as possible. They were also told that other people had performed the task, that fairly complete norms had been developed, and that afterwards, they would be able to compare their performance with that of others. Low-dissonance subjects carried out the experiment as they had been led to expect, but high-dissonance subjects were told that they would not receive the credit that had been promised them and that, therefore, they were free to leave even though the experimenter preferred that they stayed. Four out of 54 students left so that 50 students took part in the experiment. Weick's (1964) main hypothesis was that the performance of high-dissonance subjects would be superior to that of low-dissonance subjects.

As Table 2 shows, the high-dissonance group performed only slightly below their goal, but the low-dissonance group was much below. All the differences between the two conditions were statistically significant and in the expected direction. Performance improved in both groups, but while the attainment time on the fourth trial for the low-

TABLE 2. PERFORMANCE OF GROUPS GETTING CREDIT AND GETTING NO CREDIT (WEICK, 1964)

Performance of groups	Condition	
	No credit	Credit
Average goal time (seconds)	62.44	125.40
Average performance time (seconds)	70.64	191.38
Attainment discrepancy (seconds)	-8.20	-65.98
Average cost of cues (points)	72.57	118.77

dissonance group was 117.4 seconds, it was only 43.71 seconds for the high-dissonance group.

Weick's (1964) results are impressive, and a provocative analogy can be made with business budgeting. Top management could carry out its long-range planning independent of managers at the operating level. Then, like Weick's (1964) students, managers could be allowed a choice as to whether they would participate in the budgeting game. If they chose to use a budget, both top management and the budgeted individual would want challenging goals, because then achieving the goal would give a sense of accomplishment to the budgeted individual and it would also increase profit for top management.

SUMMARY

A budgeting system was described as a hierarchical combination of a goal-setting machine and a goal-achieving machine. The goal-achieving machine sets goals which should increase corporate profit; the goal-achieving machine endeavors to achieve exactly the budgeted goal in order to facilitate organizational coordination and planning. Evidence presented showed that goals significantly affect performance, that participation in goal setting of itself, had little discernible direct effect on the goal levels set, that monetary incentives encouraged the setting of less difficult goals when the reward depended strictly on goal achievement, and it was suggested that inadequate extrinsic rewards may result in the setting of difficult goals and higher performance.

As a result of the survey, a number of problems for further research have become apparent.

1. Evidence is needed as to whether personality characteristics such as needs for dependence or authoritarianism are associated with a budgeted individual's acceptance of a goal set by higher management.

2. Evidence is needed about the relation between managers' perceptions of how their budgetary performance affects their salaries and how this perception affects their goal-setting behavior. The effect of other variables on goal-setting behavior should also be considered.

3. In particular, evidence is needed from industrial settings of the effects on goal setting and performance when cognitive dissonance has been created by allowing managers to choose whether they will work with a budget when it is known that there are extrinsic rewards for goal achievement.

4. Evidence is also needed about how variables such as those discussed in this paper may interact with each other to affect goal setting, budget acceptance and budget achievement.

Roger L. M. Dunbar is an assistant professor of business administration at Southern Methodist University.

REFERENCES

- Brehm, Jack W., and Arthur R. Cohen
1962 *Explorations in Cognitive Dissonance*. New York: Wiley.
- Dill, William R.
1965 "Business organizations." In James G. March (ed.), *Handbook of Organizations*: 1071-1114. Chicago: Rand-McNally.
- Festinger, Leon
1957 *A Theory of Cognitive Dissonance*. Evanston: Row, Peterson.
- Georgopoulos, Basil S., Gerald M. Mahoney, and Nyle W. Jones
1957 "A path-goal approach to productivity." *Journal of Applied Psychology*, 41: 345-353.
- Hofstede, Geert H.
1967 *The Game of Budget Control*. Assen: Van Gorcum.
- Lawler, Edward E.
1967 "Secrecy about management compensation: are there hidden costs?" *Organizational Behavior and Human Performance*, 2: 182-189.
- Lawrence, Lois C., and Patricia C. Smith
1955 "Group decision and employee participation." *Journal of Applied Psychology*, 39: 334-337.
- Likert, Rensis
1967 *The Human Organization*. New York: McGraw-Hill.
- Locke, Edwin A.
1968 "Toward a theory of task motivation and incentives." *Organizational Behavior and Human Performance*, 3: 157-189.
- Locke, Edwin A., Judith A. Bryan, and Lorne M. Kendall
1968 "Goals and intentions as mediators of the effects of monetary incentives on behavior." *Journal of Applied Psychology*, 52: 104-121.
- Rath, Arthur A.
1960 "The case for individual incentives." *Personnel Journal*, 39: 172-175.
- Siegel, Sidney, and Lawrence E. Fouraker
1960 *Bargaining and Group Decision Making*. New York: McGraw-Hill.
- Sord, Burnard H., and Glen A. Welsch
1958 *Business Budgeting, A Survey of Management Planning and Control Practices*. New York: Controllershship Foundation.
- Stedry, Andrew C.
1960 *Budget Control and Cost Behavior*. Englewood Cliffs, N.J.: Prentice-Hall.
1962 "Aspiration levels, attitudes, and performance in a goal-oriented situation." *Industrial Management Review*, 2: 60-76.
- Stedry, Andrew C., and Emanuel Kay
1966 "The effect of goal difficulty on performance: a field experiment." *Behavioral Science*, 11: 459-470.
- Tannenbaum, Arnold S.
1968 *Control in Organizations*. New York: McGraw-Hill.
- Toppen, J. T.
1965a "Effect of size and frequency of money reinforcement on human operant (work) behavior." *Perceptual and Motor Skills*, 20: 259-269.
1965b "Money reinforcement and human operant (work) behavior: 111 piece-work-payment and time-payment comparisons." *Perceptual and Motor Skills*, 21: 907-913.

Vroom, Victor H.

1960 Some Personality Determinants of the Effects of Participation. Englewood Cliffs, N.J.: Prentice-Hall.

1964 Work and Motivation. New York: Wiley.

Weick, Karl E.

1964 "Reduction of cognitive dissonance

through task enhancement and effort expenditure." *Journal of Abnormal and Social Psychology*, 68: 533-539.

1966 "Task acceptance dilemmas: a site for research on cognition." In Shel Feldman (ed.), *Cognitive Consistency*: 225-255. New York: Academic Press.