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Making Workers More Effective

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INTRODUCTION

Productivity is a measure relating a quantity or quality of output to the inputs required to produce it (About, Inc. 2007). Throughout this paper, we will focus on variables that affect productivity. This information can help guide companies towards increasing their productivity.

In the formula X=f(a, b, c, d, e . . . to infinity), productivity can be the dependent variable (X). The independent variables a, b, c, d to infinity affect firm productivity. This study identifies some individual independent variables, such as culture, goal setting, role clarity, feedback, supervising relationships, expectations, and performance appraisals.

The theory is that positive independent variables should have a positive effect on productivity. All of these independent variables have ever-changing effects on productivity. It is suggested there be a balance of these variables as they affect productivity. For example, W. Edwards Deming makes a major point: "Don't have quotas." For this article it will be assumed that quotas are goals. Deming seems to be saying that an overemphasis on quotas (goals) at the expense of the other independent variables can have a negative impact on productivity and quality. This article takes into account the importance of Deming's work whether you call them goals, objectives, quotas, or schedules. A manufacturing system

must have some measure of expectations. Experience dictates that a balance of independent variables in this study contributes to productivity.

This article and supporting study does not take into account systems, procedures, workflow, ergonomics, and investment in new equipment. Each of these is another of the independent variables that go on to infinity.

REVIEW OF LITERATURE

The quest for increased productivity and job effectiveness in the modern work environment has become a continuous process for those companies seeking a competitive advantage in their respective markets. Many factors have been identified that influence effective behavior. These factors include the use of rewards for effective performance, employee empowerment, participatory management, employee autonomy, clear and achievable goals, control over the work environment, encouragement of creative thinking, opportunity, ability, and resource availability. This article, with study results, attempts to clarify factors that create a culture for good performance. Rewards, empowerment, goal setting, recognition and job satisfaction all play a role in creating a positive work environment. The Continental Can Company Productivity Program, using the theory and procedures of goal setting, knowledge of results and positive feedback, created dramatic results in productivity, quality and morale (Migliore 2005).

"Never underestimate the power of a thank you," explains Tracy Michaud, HR manager at the Hitchcock Chair Co., "It is a statement that is hard to argue with, after all a tangible expression of thanks or of reward can be an excellent way to encourage higher performance and promote valued company behaviors" (Cadrain 2003, 12). Rewards play an important role in the process of employee motivation and effectiveness. A high level of job satisfaction was reported in a survey of employees with Mesa Products Inc. Employees reported the profit sharing system used by Mesa was a big factor (Ray 2002). "People enjoy working, and tend to thrive in organizations that create positive work environments where they can make a difference, and where most people in the organization are competent and pulling together to move the company forward" (Bursch 1999, 32). Seniority-based bonus vacation, sick leave and totally free health-care are being scaled back in the modern manufacturing setting, but bonus benefits such as cash payments for reaching certain goals are becoming more common and are better for manufacturers, because benefits are tied directly to more productive hours of employment (Vinas 2004). As Tom Davenport, a principal with Towers

Perrin, an international consulting firm in San Francisco, states: “When people have the tools to perform, the proper training, coaching and feedback from the boss, and recognition for good work, they not only do a better job, but they also feel better about their jobs” (Caudron 2001, 14).

Research has shown that there is a direct correlation between productivity and empowerment, and absenteeism and employee turnover (Anonymous 2001). Jim Willard, Sr. Vice President of manufacturing, Nabisco Biscuit Co., explains his philosophy on employee empowerment, “Our adherence to principles of continuous improvement requires communications in a framework of employee involvement, assuring a compatible environment to support our people in their delivery of a smooth flow of production” (Swientek 2004, 4).

Another important factor influencing job performance is the setting of identifiable and reachable goals (Carr 1993; Greenberg and Weinstein 1992; Mundel 1992). According to a recent study in Performance Appraisal News and Recent Developments, 52% of workers want their supervisors to state performance goals more clearly. Nearly 40% want the issue of their performance on the job more closely tied to both the development plans and their compensation outcomes. A recent article in *The Wall Street Journal* asserts that people must have goals that are both clear and challenging in order to motivate high performance (Chu 2004). “Companies realize that performance management is not just about automating annual performance evaluations, it is also about establishing an ongoing process that aligns employees to corporate strategy and one that facilitates a continuous cycle of planning, performing and reviewing” states Paul Schaut, President and CEO of Performaworks, *Business Wire* magazine (2003, 1). Performance management focuses on employee goal setting, performance appraisal, development, coaching and rewards (Anonymous 2000). In an interview with *Workforce* magazine, Fred Nickels, a senior consultant with The Distance Consulting Company, describes four basic performance principles. According to Nickels, goals should be set and agreed upon by both manager and employee, metrics for measurements should be clearly articulated, goals should be flexible enough to reflect changing conditions in economy and work place, and employees should think of their managers as coaches who are not there to pass judgment, but to help in their success (Fandray 2001).

Other elements that influence job performance include physical control over the work environment, encouragement of creative thinking (Bridges 1993; Dimitroff 1991), and opportunity, ability, and resources (Carr 1993; Smith 1993).

Although an argument can be made supporting the idea that job satisfaction and performance are related, it is not uncontroversial. In other words, superior job performance may lead to job satisfaction. Paul Spector, Ph.D., a leading researcher in the field of employee satisfaction from the University of South Florida, believes there is a strong relationship between job satisfaction and job performance. He summarizes that when employees are well matched with the job, they will tend to do their jobs well, thus leading to a higher level of satisfaction and increased productivity (Liberman 2000). According to John McClenahen, productivity in American factories increased at a seasonally adjusted annual rate of 4.6%, with productivity among durable goods growth at a 4.8% rate and nondurable goods at a 5.4% rate (McClenahen 2005). Theorists have even expressed the idea that it is a "myth" that a satisfied worker makes a productive worker (Latting 1991; Herzberg, Mausner, andSynderman 1959). Acording to an employee study, achievement, recognition, responsibility, the work itself, and advancement along with growth, lead "to extreme satisfaction." Even today, these factors occur in a well-managed enterprise, and not only do they improve job satisfaction, they also improve agency productivity and corporate profitability (Tobias 2000).

Within the framework of the ongoing debate, many differing perspectives may be engaged. Some researchers believe the issue can be better understood through examination of the corporate culture within which an employee must work (Greenberg and Weinstein 1992; Poupart and Hobbs 1989; Migliore 2005). While large companies almost always have a formalized review process, many smaller to mid-sized companies have a less structured system, sometimes leaving it up to individual managers as to whether, and how, to conduct an employee performance appraisal (Smith 2004). Others believe that a more individualized approach should be used, focusing on the individual within the corporate structure (Dimitroff 1991; Donaldson, 1990).

Manufacturing efficiency measured by engineered standards, quality, spoilage, cost reductions and shipping schedules was improved during a two-year period in a manufacturing department of Continental Can Company, a major U.S. container corporation. In that period, manufacturing efficiency increased from 76% to 92%. A management system of goal setting, feedback on performance, and performance appraisal with an emphasis on communication was introduced (Migliore 1970). The success of that plant set the stage for the overall productivity/efficiency program for the company (Migliore 1974). Cross Manufactur-

ing, Overland Park, Kansas, used this program to increase using cell groups (Migliore 1995).

Despite differences of opinion regarding the relationship between employee satisfaction and employee effectiveness, managers and theorists alike are taking closer looks at ways to better motivate the corporate workforce. For people to be effective at work, they must find fulfillment and satisfaction on the job (HumaNext 2007). In examining job performance, several elements of what makes an employee effective continue to surface in the literature. As noted above, those elements include rewards, autonomy, empowerment, participatory management, clear and attainable goals, recognition, ability, and resource availability.

DATA COLLECTION

The research instrument has been developed over a twenty-year period (Migliore 2005). It is designed to measure elements of the corporate culture, individual attributes, and perceived values of both the individual employee and the corporation. The purpose of the questionnaire was to determine how the managers in the study rated different aspects of the planning, management and control systems. The frame of reference for the study was the individual employee. The respondents were asked to rank and to rate various factors as they related to their job performance and the attributes of the organization as a whole. Respondents answered by providing perceptions and beliefs related to the performance of themselves, their supervisors, and those whom they supervise.

The questionnaires were administered in six manufacturing companies in the United States. The respondents consisted of middle and first-line managers in each organization. A total of 288 responses were used for analysis. In addition, demographic information concerning the individual and the company was collected.

METHODOLOGY AND FINDINGS

Statistical analysis was used to explore elements that may contribute to the performance of the respondents. Eleven questions were asked to explore how the respondents believed they could be more effective on the job (see Appendix A). Factor analysis of the eleven questions produced three factors explaining 57% of the variance (see Table 1). Factor 1 could be identified as a “role clarity” factor, and explained 25% of the total variance. Variables loading high on factor one

included "clearer goals," "clearer job description," "better understanding of the organization's purpose," and "better conception of how my boss evaluates my work."

Table 1
Factor Analysis of Variables
Contributing to Enhanced Effectiveness

ROTATED FACTOR PATTERN

VARIABLE	FACTOR 1	FACTOR 2	FACTOR 3
More job training	0.19053	0.69004	0.05543
Better supervision	0.13530	0.72827	0.29452
More control	-0.00157	0.32651	0.74671
Personal commitment	0.22313	0.65929	0.13313
Clear job description	0.73077	0.29012	0.06814
Judgment freeedom	0.59394	0.00503	0.49029
How boss evaluates	0.65440	0.37162	-0.00927
Clearer goals	0.84192	0.15118	0.06008
Company's purpose	0.54534	0.34494	0.06779
Better resources	0.50838	-0.03500	0.41602
Better team	0.11584	0.13429	0.76953

VARIANCE EXPLAINED BY EACH FACTOR

FACTOR 1	FACTOR 2	FACTOR 3
2.69720	1.931202	1.683676

Final Communality Estimates: Total = 6.3122397
Note: Rotation Method–Varimax

The second factor included the variables "better supervision," "more job training," as well as "greater personal commitment." Factor 2 explained 18% of the total variance of the model. The third factor included the two variables "more control over my subordinates" and "better team to work with." Factor 3 explained 15% of the variance. Table 1 exhibits the findings of the factor analysis with a varimax rotation.

The average scores of the job variable rankings produced five items that were noticeably higher than the rest. The variables rated highest by the composite were "better resources" (x=3.14), "more job training" (x=3.094), "clearer goals" (x=2.858), "more independent judgment and freedom" (x=2.812), and "how boss evaluates" (x=2.742). "Better resources" double-loaded, having moderate

Table 2
Ranked Arithmetic Means

1.	Xj =	Better resources	= 3.140
2.	Xa =	More job training	= 3.094
3.	Xh =	Clearer goals	= 2.858
4.	Xf =	More independent judgment and freedom	= 2.812
5.	Xg =	How boss evaluates	= 2.742
6.	Xe =	Clear job description	= 2.396
7.	Xk =	Better team	= 2.380
8.	Xi =	Company's purpose	= 2.347
9.	Xd =	Personal commitment	= 2.155
10.	Xb =	Better supervision	= 2.094
11.	Xc =	More control	= 2.092

scores on both factors one and three. "More job training" loaded high on the second variable, while the other three variables loaded high on the first factor. The lack of any single strong score suggests that segmentation of the respondents might reveal varying patterns of needs. To investigate this possibility, the respondent pool was categorized into two subsets.

The analysis was taken a step further by dividing the respondent pool into an "effective/not effective" categorization to determine if the "not effective" respondents answered differently in how they believed that they could increase job performance as compared to the "effective" respondents. The average score for the responses to the eleven questions for each of the 288 respondents was calculated. Then the difference between each question and the average score for each respondent was computed.

A positive difference between the actual question and the average for all questions would indicate that the respondents believed that question was relatively important in being more effective. The t-test for related measures determined whether the differences were significantly different than zero. The important questions were those significant at the $p < .05$ level of significance with positive differences. The results of the test are in Table 3.

The t-test for related measures was used to examine those respondents categorized as "not effective" and then to examine the "effective" respondents. The index created to measure effectiveness combined performance recognition and the employee's perceived effectiveness. The responses to the question "my

Table 3
T-Test for Related Measures for
"Not Satisfied" and "Satisfied" Respondents

NOT SATISFIED

VARIABLE	DIFFERENCE	N	T	P
More job training	0.450	52	4.94	0.0001
Better supervision	-0.279	51	-1.94	0.0581
More control	-0.500	47	-3.40	0.0014
Personal commitment	-0.416	52	-2.79	0.0074
Clear job description	-0.067	51	-0.41	0.6836
Judgment freedom	0.181	52	1.17	0.2490
How boss evaluates	0.411	52	2.70	0.0093
Clearer goals	0.373	52	2.74	0.0085
Company's purpose	-0.377	52	-2.48	0.0165
Better resources	0.411	52	2.72	0.0090
Better team	-0.242	52	-1.48	0.1438

SATISFIED

VARIABLE	DIFFERENCE	N	T	P
More job training	0.668	86	6.14	0.0001
Better supervision	-0.501	85	-5.86	0.0001
More control	-0.404	83	-3.95	0.0002
Personal commitment	-0.353	85	-3.84	0.0002
Clear job description	-0.215	86	-2.38	0.0195
Judgment freedom	0.331	86	3.03	0.0032
How boss evaluates	0.068	85	0.69	0.4920
Clearer goals	0.133	86	1.32	0.1909
Company's purpose	-0.111	86	-1.12	0.2652
Better resources	0.517	86	4.34	0.0001
Better team	-0.157	86	-1.49	0.1401

capabilities are fully utilized" were added to the responses to the question "I am recognized for good work." The average index (XPROD) was computed with the highest 25% categorized as effective and the lowest 25% categorized as not effective.

The "effective" respondents responded with the following top two questions: "more job training" (p=.0001, n=71) and "better resources" (p=.0002, n=71).

Table 4
T-Test for Related Measures for
"Not Effective" and "Effective" Respondents

NOT EFFECTIVE

VARIABLE	DIFFERENCE	N	T	P
More job training	0.522	82	4.90	0.0001
Better supervision	-0.559	81	-5.16	0.0001
More control	-0.600	76	-4.86	0.0001
Personal commitment	-0.539	80	-4.84	0.0001
Clear job description	-0.189	80	-1.50	0.1373
Judgment freedom	0.156	82	1.42	0.1605
How boss evaluates	0.363	82	2.93	0.0044
Clearer goals	0.485	82	4.50	0.0001
Company's purpose	-0.124	82	-1.08	0.2844
Better resources	0.585	81	4.90	0.0001
Better team	-0.161	82	-1.27	0.2072

EFFECTIVE

VARIABLE	DIFFERENCE	N	T	P
More job training	0.580	71	5.40	0.0001
Better supervision	-0.489	72	-5.47	0.0001
More control	-0.225	68	-2.51	0.0144
Personal commitment	-0.175	71	-1.95	0.0556
Clear job description	-0.197	71	-2.17	0.0336
Judgment freedom	0.192	72	1.60	0.1147
How boss evaluates	0.011	72	0.11	0.9121
Clearer goals	0.164	72	1.54	0.1277
Company's purpose	-0.225	72	-1.83	0.0708
Better resources	0.516	71	4.00	0.0002
Better team	-0.155	72	-1.37	0.1743

"Clearer goals" and "how boss evaluates" were notably missing from the "effective" respondents. To determine if the "not effective" respondents responded differently than the "effective" respondents, the t-test for independent means was used. Two questions were significant at the $p<.05$ level. "How boss evaluated" ($p=.0300$) and "clearer goals" ($p=.0367$) were both significant. Differentiating between "not effective" and "effective" responses, "not effective" respondents indicated that they would be more effective if they knew how the boss evaluated their work and had clearer goals.

Table 5
T-Test for Independent Means for "Not Effective" Versus "Effective"

VARIABLE: HOW BOSS EVALUATES

CATEGORY	N	STANDARD MEAN	STANDARD DEVIATION	ERROR
Not Effective	82	0.36337768	1.12431286	0.12415958
Effective	72	0.01129349	0.86541271	0.10198987

T-VALUE	DEGREES OF FREEDOM	P > |T|
2.1912	150.0	0.0300

VARIABLE: CLEARER GOALS

CATEGORY	N	STANDARD MEAN	STANDARD DEVIATION	ERROR
Not Effective	82	0.48532890	0.97737424	0.10793293
Effective	72	0.16407127	0.90339468	0.10646608

T-VALUE	DEGREES OF FREEDOM	P > |T|
2.1082	152.0	0.0367

INTERPRETATIONS OF THE FINDINGS

It appears evident from the study that effectiveness and job performance may be improved when communication of expectations is enhanced and facilitated. The elements, which appeared most often and with the greatest level of significance, in differentiating between the two extremes, included the establishment of more clearly defined goals and a better understanding of the evaluation criteria for achieving the goals that are used by the supervisor in determining job performance. Both elements appear in factor one of the analysis above, identified as the "role clarity factor." In addition, better job training and availability of resources were the most important elements among all respondents. It seems apparent that the most crucial element in improving "not effective" employees involves improving employee understanding of the evaluation criteria.

CONCLUSION

Productivity can be increased in a positive culture. A balance of performance objectives, feedback, good communication, teamwork, and employee empower-

ment all contribute to improved productivity. These principles were validated in a study of six medium-sized manufacturing companies. The study conducted and the literature reviewed indicates that management can create an environment that is conducive to making workers more effective. Management can set up, maintain and encourage goal setting, performance review, and meaningful boss/worker communication and job training. The work environment must have facilities, tools, and a physical layout for the management system. This would create a positive effect. The 288 responses not only paint a clear picture but also, detail is needed to make workers more effective.[1]

1. This article is based on a paper presented at the SWFAD Academic Meeting in St. Louis, March 2002. Significant contributions were made by James Beard, Maggie Dorrell, David Dyson, and Rinne Martin.

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Appendix A
Sample Questions: Corporate Culture Questionnaire

I believe I would be more effective on the job if I had:
(Circle the numeral to indicate the answer.)

ROTATED FACTOR PATTERN

	NOT AT ALL	SLIGHTLY	MODERATELY	CONSIDERABLY	VERY MUCH SO
A. More job training	1	2	3	4	5
B. Better supervision	1	2	3	4	5
C. More control over my subordinates	1	2	3	4	5
D. Greater personal commitment to produce more	1	2	3	4	5
E. More clearly defined job description and duties	1	2	3	4	5
F. More freedom to use my own judgment	1	2	3	4	5
G. Better conception of how my boss evaluates my work	1	2	3	4	5
H. Clearer goals to work toward	1	2	3	4	5
I. Better understanding of organization's purpose or mission	1	2	3	4	5
J. Better resources (facilities, equipment, tools, etc.) to work with	1	2	3	4	5
K. Better team to work with	1	2	3	4	5