Knowledgebank: **JOB DESIGN**

Job design is an important method managers can use to enhance employee performance. Job design is how organizations define and structure jobs. As we will see, properly designed jobs can have a positive impact on the motivation, performance, and job satisfaction of those who perform them. On the other hand, poorly designed jobs can impair motivation, performance, and job satisfaction.

Until the nineteenth century, many families grew the things they needed, especially food. General craft jobs arose as people ceased or reduced their own food production, used their labor to produce other goods such as clothing and furniture, and traded these goods for food and other necessities. Over time, people's work became increasingly specialized as they followed this general pattern. For example, the general craft of clothing production splintered into specialized craft jobs such as weaving, tailoring, and sewing. This evolution toward specialization accelerated as the Industrial Revolution swept Europe in the 1700s and 1800s, followed by the United States in the later 1800s.

The trend toward specialization eventually became a subject of formal study. The two most influential students of specialization were Adam Smith and Charles Babbage. Smith, an eighteenth-century Scottish economist, originated the phrase division of labor in his classic book *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776.[1] The book tells the story of a group of pin makers who specialized

1. Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations.* (New York: Modern Library, 1937). Originally published in 1776.

their jobs to produce many more pins per person in a day than each could have made by working alone.

In Smith's time, pin-making, like most other production work, was still an individual job. One person would perform all of the tasks required: drawing out a strip of wire, clipping it to the proper length, sharpening one end, attaching a head to the other end, and polishing the finished pin. With specialization, one person did nothing but draw out wire, another did the clipping, and so on. Smith attributed the dramatic increases in output to factors such as increased dexterity owing to practice, decreased time changing from one production operation to another, and the development of specialized equipment and machinery. The basic principles described in *The Wealth of Nations* provided the foundation for the assembly line.

Charles Babbage wrote *On the Economy of Machinery and Manufactures* in 1832.[2] Extending Smith's work, Babbage cited several additional advantages of job specialization: relatively little time was needed to learn specialized jobs, waste decreased, workers needed to make fewer tool and equipment changes, and workers' skills improved through the frequent repetition of tasks.

As the Industrial Revolution spread to the United States from Europe, job specialization proliferated throughout industry. It began in the mid-1880s and reached its peak with the development of scientific management in the early 1900s.

Job Specialization

Frederick W. Taylor, the chief proponent of job specialization, argued that jobs should be scientifically studied, broken down into small component tasks, and then standardized across all workers doing the jobs.[3] Taylor's view was consistent with the premises of division of labor as discussed by Smith and Babbage. In practice, job specialization generally brought most, if not all, of the advantages its advocates claimed. Specialization paved the way for large-scale assembly lines and was at least partly responsible for the dramatic gains in output US industry achieved for several decades after the turn of the century.

On the surface, job specialization appears to be a rational and efficient way to structure jobs. The jobs in chicken-processing plants, for instance, are highly specialized and result in high levels of productivity. In practice, however, performing those jobs can cause problems, foremost among them the extreme monotony of highly specialized tasks. Consider the job of assembling toasters. A person who does the entire assembly may find the job complex and challenging, albeit inefficient. If the job is specialized so that the worker simply inserts a heating coil into the toaster as it passes along on an assembly line, the process may be efficient, but it is unlikely to interest or challenge the worker. A

2. Charles Babbage, *On the Economy of Machinery and Manufactures.* (London: Charles Knight, 1832).

3. Frederick W. Taylor, *The Principles of Scientific Management.* (New York: Harper & Row, 1911).

worker numbed by boredom and monotony may be less motivated to work hard and more inclined to do poor-quality work or to complain about the job. For these reasons, managers began to search for job design alternatives to specialization.

One of the primary catalysts for this search was a famous 1952 study of jobs in the automobile industry. The purpose of this study was to assess how satisfied automobile workers were with various aspects of their jobs.[4] The workers indicated that they were reasonably satisfied with their pay, working conditions, and the quality of their supervision. However, they expressed extreme dissatisfaction with the actual work they did. The plants were very noisy, and the moving assembly line dictated a rigid, grueling pace. Jobs were highly specialized and standardized.

The workers complained about six facets of their jobs: mechanical pacing by an assembly line, repetitiveness, low skill requirements, involvement with only a portion of the total production cycle, limited social interaction with others in the workplace, and lack of control over the tools and techniques used in the job. These sources of dissatisfaction were a consequence of the job design prescriptions of scientific management. Thus, managers began to recognize that although job specialization might lead to efficiency, if carried too far, it would have a number of negative consequences.

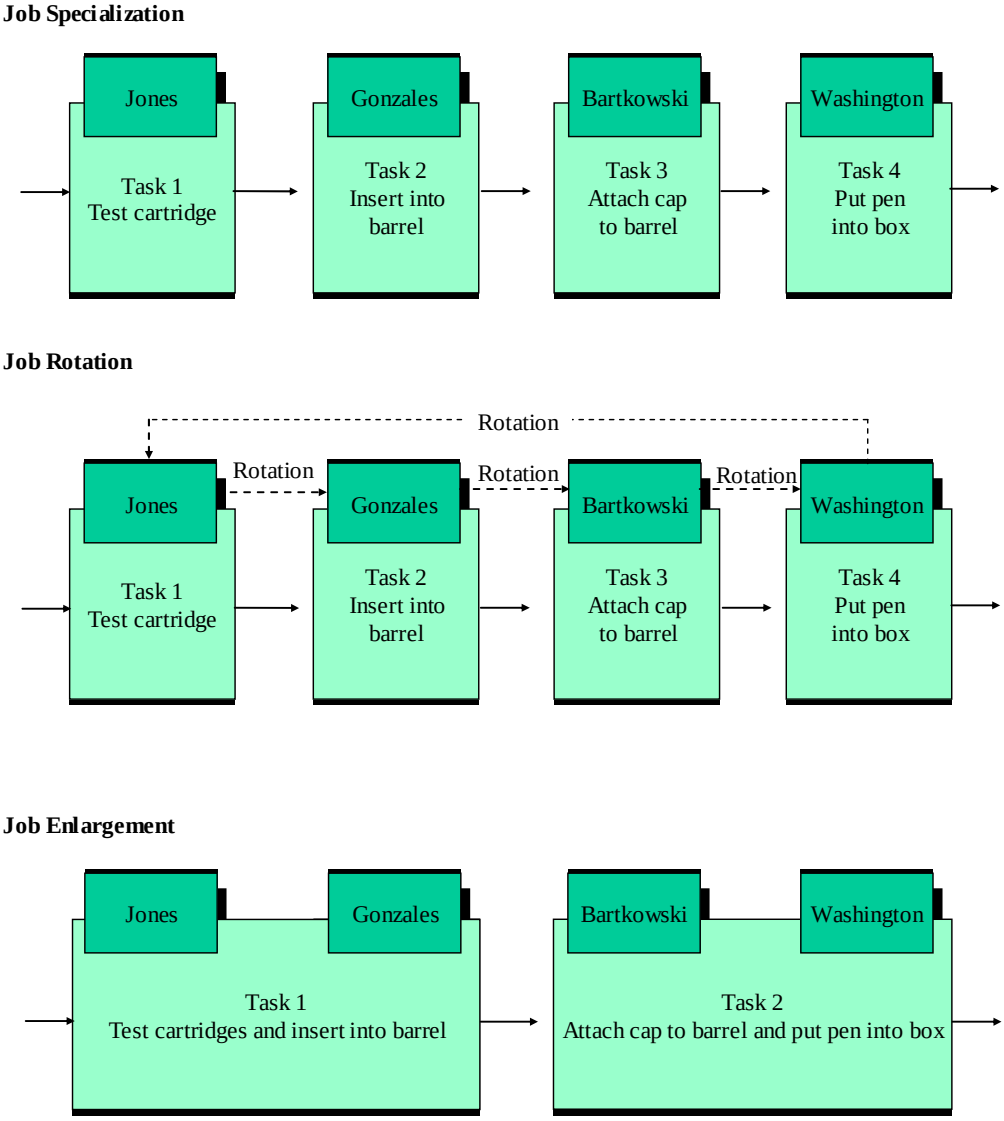
Early Alternatives to Job Specialization

In response to the automobile plant study, other reported problems with job specialization, and a general desire to explore ways to create less monotonous jobs, managers began to seek alternative ways to design jobs. Two of the first alternatives were job rotation and job enlargement.

Job Rotation Job rotation involves systematically shifting workers from one job to another to sustain their motivation and interest. Figure 2 contrasts job rotation and job specialization. Under specialization, each task is broken down into small parts. For example, assembling pens might involve four discrete steps: testing the ink cartridge, inserting the cartridge into the barrel of the pen, screwing the cap onto the barrel, and inserting the assembled pen into a box. One worker performs each of these four tasks.

4. C. R. Walker and R. Guest, *The Man on the Assembly Line*. (Cambridge, Mass.: Harvard University Press, 1952).

figure 2 **Job Specialization, Rotation, and Enlargement**



Job specialization involves breaking down a job into small component tasks. As illustrated here, each worker then performs one of these tasks. In job rotation, the tasks remain the same, but workers rotate among them. Job enlargement combines small tasks into somewhat larger ones; an individual worker is assigned to each of the new enlarged jobs.

When job rotation is introduced, the tasks themselves stay the same. However, as Figure 2 shows, the workers who perform them are systematically rotated across the various tasks. Jones, for example, starts out with job 1 (testing ink cartridges). On a regular basis-perhaps weekly or monthly-she is systematically rotated to job 2, to job 3, to job 4, and back to job 1. Gonzalez, who starts out on job 2 (inserting cartridges into barrels), rotates ahead of Jones to jobs 3, 4, 1, and back to 2.

Numerous firms have used job rotation, including American Cyanamid, Baker International, Ford, and Prudential Insurance. Job rotation did not entirely live up to expectations, however.[5] The problem again was narrowly defined, routine jobs. If a rotation cycle takes workers through the same old jobs, the workers simply experience several routine and boring jobs instead of just one. Although a worker may begin each job shift with a bit of renewed interest, the effect usually is short-lived.

Rotation may also decrease efficiency. For example, it clearly sacrifices the proficiency and expertise that grow from specialization. At the same time, job rotation is an effective training technique because a worker rotated through a variety of related jobs acquires a larger set of job skills. Thus, there is increased flexibility in transferring workers to new jobs. Many US firms now use job rotation for training or other purposes, but few rely on it to motivate workers. Pilgrim's Pride, one of the largest chicken-processing firms in the United States, is currently using job rotation, for instance, but not for motivation. As noted in the opening incident, workers in a chicken-processing plant are subject to cumulative trauma injuries such as carpel tunnel syndrome. Managers at Pilgrim's believe that rotating workers across different jobs can reduce these injuries.[6]

Job Enlargement Job enlargement, or horizontal job loading, is expanding a worker's job to include tasks previously performed by other workers. This process is also illustrated in Figure 2. Before enlargement, workers perform a single, specialized task; afterward, they have a "larger" job to do. Thus, after enlargement Jones and the other workers each does a "bigger" job than he or she did previously. Thus, assembling the pens has been redefined as two tasks rather than four. Jones and Gonzalez do the first task, while Bartkowski and Washington do the other. The logic behind this change is that the increased number of tasks in each job reduces monotony and boredom.

Maytag was one of the first companies to use job enlargement. In the assembly of washing machine water pumps, for example, jobs done sequentially by six workers at a conveyor belt were modified so that each worker completed an entire pump alone. Other organizations that implemented job enlargement included AT&T, the US Civil Service, and Colonial Life Insurance Company.

Unfortunately, job enlargement also failed to have the desired effects. Generally, if the entire production sequence consisted of simple, easy-to-master tasks, merely doing more of them did not significantly change the worker's job. If the task of putting two bolts on a piece of machinery was "enlarged" to putting on three bolts and connecting two wires, for example, the monotony of the original job essentially remained.

5. Ricky W. Griffin, *Task Design: An Integrative Approach*. (Glenview, Ill.: Scott, Foresman, 1982).

6. " These Six Growth Jobs Are Dull, Dead-End, Sometimes Dangerous," *Wall Street Journal*, December 1, 1994, pp. A1, A8, A9.

Job Enrichment

Job rotation and job enlargement seemed promising but eventually disappointed managers seeking to counter the ill effects of extreme specialization. They failed partly because they were intuitive, narrow approaches rather than fully developed, theory-driven methods. Consequently, a new, more complex approach to task design-job enrichment-was developed. Job enrichment is based on the two-factor theory of motivation, as discussed in Chapter 10 of the text. That theory contended that employees could be motivated by positive job-related experiences such as feelings of achievement, responsibility, and recognition. To achieve this, job enrichment relies on vertical job loading—not only adding more tasks to a job, as in horizontal loading, but giving the employee more control over those tasks.[7]

AT&T, Texas Instruments, IBM, and General Foods have all used job enrichment. For example, AT&T used job enrichment in a group of eight typists who were responsible for preparing service orders. Managers believed turnover in the group was too high and performance too low. Analysis revealed several deficiencies in the work. The typists worked in relative isolation, and any service representative could ask them to type work orders. As a result, they had little client contact or responsibility, and they received scant feedback on their job performance. The job enrichment program focused on creating a typing team. Each member of the team was paired with a service representative, and the tasks were restructured: Ten discrete steps were replaced with three more complex ones. In addition, the typists began to get specific feedback on performance, and their job titles were changed to reflect their greater responsibility and status. As a result of these changes, the number of orders delivered on time increased from 27 to 90 percent, accuracy improved, and turnover dropped significantly.[8]

Texas Instruments used job enrichment to improve janitorial jobs. The company gave janitors more control over their schedules and let them sequence their own cleaning jobs and purchase their own supplies. As a result, turnover dropped, cleanliness improved, and the company reported estimated cost savings of approximately $103,000.[9]

At the same time, we should note that many job enrichment programs have failed. Some companies have found job enrichment to be cost ineffective, and others believe that it simply did not produce the expected results. Several programs at Prudential Insurance, for example, were abandoned because managers believed they were benefiting neither employees nor the firm. Some of the criticism is associated with the two-factor theory

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7. Frederick Herzberg, "One More Time: How Do You Motivate Employees?" *Harvard Business Review*, January-February 1968, pp. 53-62; Frederick Herzberg, "The Wise Old Turk," *Harvard Business Review*, September-October 1974, pp. 70-80.

8. R. N. Ford, "Job Enrichment Lessons from AT&T," *Harvard Business Review*, January-February 1973, pp. 96-106.

9. E. D. Weed, "Job Enrichment 'Cleans Up' at Texas Instruments," in J. R. Maher (ed.), *New Perspectives in Job Enrichment*. (New York: Van Nostrand, 1971).

itself: the theory confuses employee satisfaction with motivation, is fraught with methodological flaws, ignores situational factors, and is not convincingly supported by research.[10]

Because of these and other problems, job enrichment recently has fallen into disfavor among many managers. Yet some valuable aspects of the concept can be salvaged. The efforts of managers and academic theorists ultimately have led to more complex and sophisticated viewpoints. Many of these advances are evident in the job characteristics approach, which we consider next.

The Job Characteristics Approach

The job characteristics approach focuses on the specific motivational properties of jobs. The most current view is the job characteristics theory. The theory also suggests that social information affects job design properties. The job characteristics theory, diagrammed in Figure 3, was developed by Hackman and Oldham.[11] At the core of the theory is the idea of critical psychological states. These states are presumed to determine the extent to which characteristics of the job enhance employee responses to the task. The three critical psychological states are:

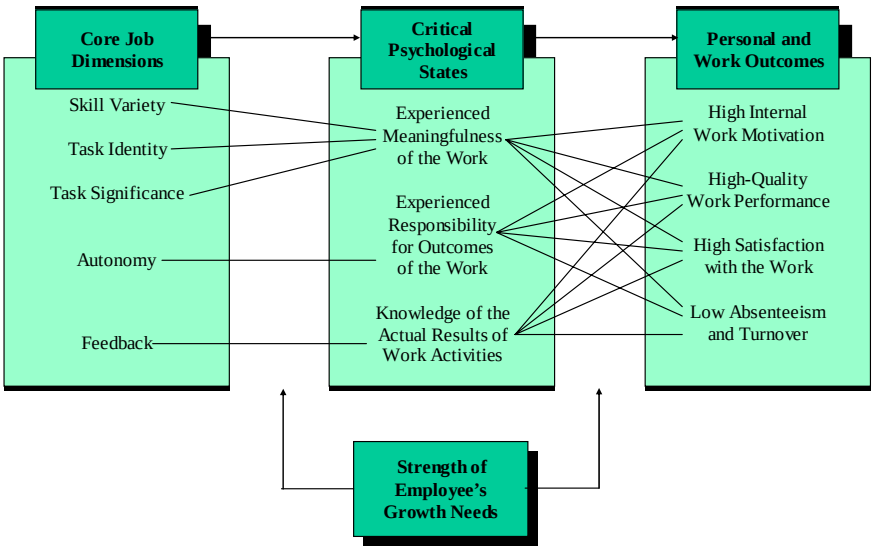
1. *Experienced meaningfulness of the work*—the degree to which the individual experiences the job as generally meaningful, valuable, and worthwhile.
2. *Experienced responsibility for work outcomes*—the degree to which individuals feel personally accountable and responsible for the results of their work.
3. *Knowledge of results*—the degree to which individuals continuously understand how effectively they are performing the job.[12]

10. Robert J. House and L. Wigdor, "Herzberg's Dual-Factor Theory of Job Satisfaction and Motivation: A Review of the Evidence and a Criticism," *Personnel Psychology*, 1967, vol. 20, 1967, pp. 369-389.

11. J. Richard Hackman and Greg Oldham, "Motivation Through the Design of Work: Test of a Theory," *Organizational Behavior and Human Performance*, vol. 16, 1976, pp. 250-279. See also Michael A. Campion and Paul W. Thayer, "Job Design: Approaches, Outcomes, and Trade-Offs," *Organizational Dynamics*, Winter 1987, pp. 66-78.

12. Ibid.

figure 3 **The Job Characteristics Theory**



The job characteristics theory is an important contemporary model of how to design jobs. By using five core job characteristics, managers can enhance three critical psychological states. These states, in turn, can improve a variety of personal and work outcomes. Individual differences also affect how the job characteristics affect people.

If employees experience these states at a sufficiently high level, they are likely to feel good about themselves and to respond favorably to their jobs. Hackman and Oldham suggest that the three critical psychological states are triggered by five characteristics of the job, or core job dimensions:

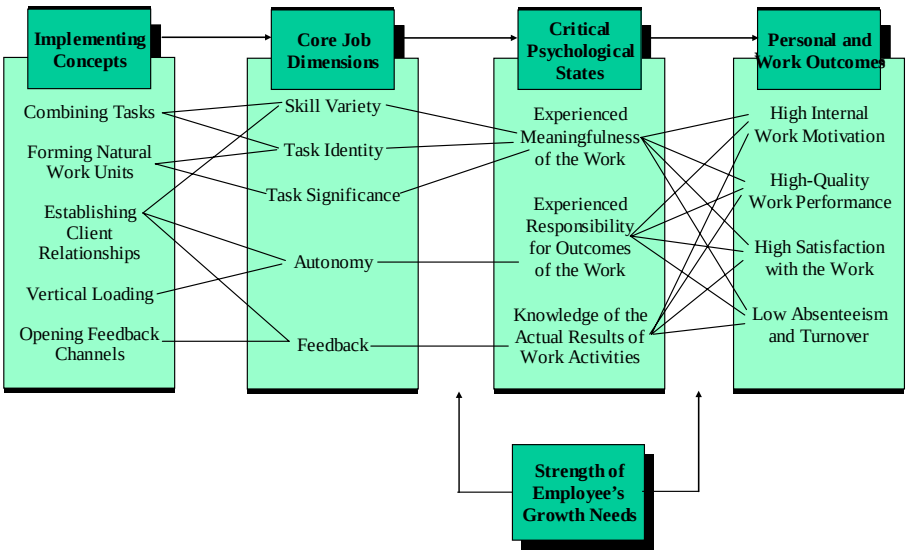
1. *Skill variety*—the degree to which the job requires a variety of activities that involve different skills and talents.
2. *Task identity*—the degree to which the job requires completion of a "whole" and an identifiable piece of work; that is, the extent to which a job that has a beginning and an end with a tangible outcome.
3. *Task significance*—the degree to which the job affects the lives or work of other people, both in the immediate organization and in the external environment.
4. *Autonomy*—the degree to which the job allows the individual substantial freedom, independence, and discretion to schedule the work and determine the procedures for carrying it out.
5. *Feedback*—the degree to which the job activities give the individual direct and clear information about the effectiveness of his or her performance.

Figure 3 shows that these five job characteristics, operating through the critical psychological states, affect a variety of personal and work outcomes: high internal work motivation (that is, intrinsic motivation), high-quality work performance, high satisfaction with the work, and low absenteeism and turnover. The figure also suggests that individual differences play a role in job design. People with strong needs for personal

growth and development will be especially motivated by the five core job characteristics. On the other hand, people with weaker needs for personal growth and development are less likely to be motivated by the core job characteristics.

Figure 4 expands the basic job characteristics theory by incorporating general guidelines to help managers implement it.[13] Managers can use such means as forming natural work units (that is, grouping similar tasks together), combining existing tasks into more complex ones, establishing direct relationships between workers and clients, increasing worker autonomy through vertical job loading, and opening feedback channels. Theoretically, such actions should enhance the motivational properties of each task. Using these guidelines, sometimes in adapted form, several firms have successfully implemented job design changes, including 3M, Volvo, AT&T, Xerox, Texas Instruments, and Motorola.

figure 4 **Implementing the Job Characteristics Theory**



Managers should use a set of implementation guidelines if they want to apply the job characteristics theory in their organization. This figure shows some of these guidelines. For example, managers can combine tasks, form natural work units, establish client relationships, vertically load jobs, and open feedback channels.

Research has generally supported this theory, although performance has seldom been found to correlate with job characteristics.[14] Several apparent weaknesses in the theory

13. J. Richard Hackman, "Work Design," in J. Richard Hackman and J. L. Suttle (eds.), *Improving Life at Work: Behavioral Science Approaches to Organizational Change*. (Santa Monica, Calif.: Goodyear, 1977).

14. Ricky W. Griffin, M. Ann Welsh, and Gregory Moorhead, "Perceived Task Characteristics and Employee Performance: A Literature Review," *Academy of Management Review*, October 1981, pp. 655-664.

have also come to light. First, the measures used to test the theory are not always as valid and reliable as they should be. Further, the role of individual differences frequently has not been supported by research. Finally, guidelines for implementation are not specific and managers usually tailor them to their own specific circumstances. Still, the theory remains a popular perspective on studying and changing jobs.[15]

Social Information and Job Design

Recent research has also suggested that social information in the workplace may influence how individuals perceive and react to job characteristics. For example, if a newcomer to the organization is told, "You're really going to like it here because everybody gets along so well," that person may assume that the job should be evaluated in terms of social interactions and that those interactions are excellent. But if the message is "You won't like it here because the boss is lousy and the pay is worse," the newcomer may think that the job's most important aspects are pay and interactions with the boss and that both areas are deficient.

This view has gotten mixed support from empirical research.[16] Indeed, research suggests that how people perceive their jobs is determined by a complex combination of both objective task characteristics and social information about those characteristics. For example, positive social information and a well-designed job may produce more favorable results than either positive information or a well-designed job alone. Conversely, negative information and a poorly designed job may produce more negative reactions than either negative social information or a poorly designed job would by itself. In situations where social information and job characteristics do not reinforce each other, they may cancel each other out. For example, negative social information may diminish the positive effects of a well-designed job, whereas positive information may at least partly offset the negative consequences of a poorly designed job.[17]

15. For a recent discussion of these issues, see Timothy Butler and James Waldroop, "Job Sculpting," *Harvard Business Review*, September-October 1999, pp. 144-152.

16. Joe Thomas and Ricky W. Griffin, "The Social Information Processing Model of Task Design: A Review of the Literature," *Academy of Management Review*, October 1983, pp. 672-682.

17. "Offenders Can Spread Ill Will From the Top Down," *USA Today*, September 9, 1998, pp. B1, B2.