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Development of a Task Assignment Tool to Customize Job Descriptions and Close Person-Job Fit Gaps

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DEVELOPMENT OF A TASK ASSIGNMENT TOOL TO CUSTOMIZE JOB DESCRIPTIONS AND CLOSE PERSON-JOB FIT GAPS

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Does the knowledge worker fit the job or should the job fit the knowledge worker? This research developed a methodology and a tool to customize a knowledge worker's job design to better fit their knowledge, skills, abilities and characteristics. The research outcomes support the customization of the job design to improve person-job fit, the documentation of the customized job design as a position description, and the use of a structured person-task assignment process. The recommended task assignment process includes a job aid that uses multivariate equations to predict expected task performance. Data were collected from two knowledge worker sub-groups: lean leaders and youth leaders. The data were used to evaluate the hypotheses and to develop and test the person-task assignment tool.

A valid and reliable measure of the level of job customization was developed and tested. The measure demonstrated significant correlations with measures of person-job fit and the job outcomes of task performance, job satisfaction and intent to quit. A method for developing a tool to predict expected task performance for a task assignment decision was developed and tested. The method reduced twenty-four person-task fit and preference variables to ten predictive variables for problem solving, project and routine

task performance. The research also investigated the effect of the incumbent's preferred behavior style on ratings of person-job fit and the occurrence of job customization.

DEVELOPMENT OF A TASK ASSIGNMENT TOOL TO CUSTOMIZE JOB DESCRIPTIONS AND CLOSE PERSON-JOB FIT GAPS

by

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CHAPTER I

INTRODUCTION

Introduction to the Problem

Peter Drucker (1999) described knowledge worker productivity as the biggest of the 21st-century management challenges. "In the developed countries, it is their first survival requirement. In no other way can the developed countries hope to maintain themselves, let alone maintain their leadership and their standards of living" (p. 92). A short-term focus prevents some managers from focusing on knowledge worker improvement.

> It's clear that the managers of knowledge work have a responsibility to optimize work processes, workplace design and technology. Unfortunately, as we've been told in numerous companies, line managers often can't find the time, the resources or the incentive to attend to the issue, because they are expected to focus on current performance (Davenport, Thomas, & Cantrell, 2002, p. 25).

Industrial engineers are knowledge workers who are frequently assigned to the role of lean leader or coordinator. Forty-five percent of the lean leaders who participated in this study received education with post secondary degrees in a discipline that they characterized as industrial engineering. Job growth and demand for industrial engineers is expected to outpace average job growth through 2016. The U.S. Department of Labor Bureau of Labor Statistics Occupational Outlook Handbook (2008) reported the actual 2006 USA labor market to be 150,620,175 jobs with a projection of 10.4 percent job growth by 2016. The industrial engineer occupational code of 17-2112 includes a portion of the jobs with a title similar to the lean leader and is a source for lean leader job candidates. Industrial engineer job growth is expected to be 20.3 percent from 201,311

jobs in 2006 to 242,263 jobs in 2016. The overall growth for engineering jobs is expected to be 10.6 percent which is close to the national average job growth rate. The lean leader job description often includes a wide variety of responsibilities and tasks that the industrial engineer may not be prepared to fulfill. The industrial engineer may not have the motivation, knowledge, skills, abilities, preferred behaviors, work experiences or delegation experience necessary for fulfilling the lean leader job description.

This is a paradox given that job descriptions are normally specific to a group of jobs. Groups of jobs frequently have similar responsibilities, similar requirements and a common set of assigned tasks that are infrequently changed. However, job candidate or incumbent capabilities and motivation vary both between individuals and within individuals over time. This is especially true for knowledge worker jobs designed with a large variety of non-routine tasks. This study focused on the process of customizing the job design to improve person-job fit through the development of a methodology and resultant tool. Evidence was collected to support the expected relationships between job customization, person-job fit, job satisfaction, and intent to quit.

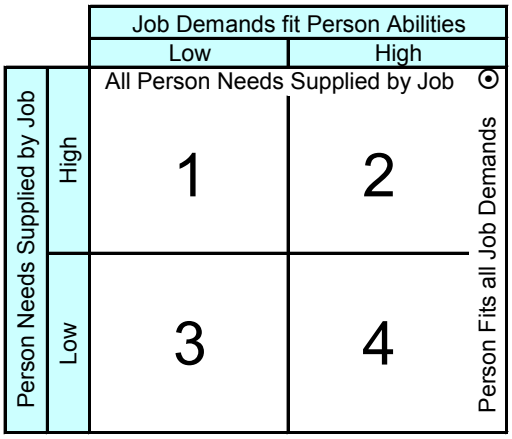
The research objectives were developed following the author's participation in lean leader and youth leader job redesign processes. One particular youth leader job redesign process had a goal to improve person-job fit and to ultimately improve the knowledge worker's task performance and job satisfaction. The initial unsuccessful performance improvement process included: task clarification, measurement, goal setting, coaching, performance feedback, and performance reevaluation. A subsequent process was initiated to redesign the job to better fit the incumbent's knowledge, skills, abilities and characteristics. The redesigned job included task reassignment, changes in

assigned tasks, and changes in related management processes. The author identified similarities between personal job redesign experiences with lean leaders and youth leaders. The similarities suggested that the redesign process may be generalized and applied to a common class of knowledge worker jobs. These jobs may be generalized and classified as knowledge workers with a variety of non-routine tasks.

The observed job redesign process included the identification of outcome expectations or customer requirements. A listing of the necessary responsibilities, competencies and tasks for fulfilling the requirements was developed. The incumbent's job performance was compared to expectations and assessed. The incumbent's preferred behaviors, knowledge, skills, abilities and characteristics (KSAC) were assessed through a process that was facilitated by a subject matter expert from an external organization. The process included performance assessment, interviews, and the administering of a preferred behavior assessment testing instrument. The job was redesigned to better fit the KSACs of the incumbent through a participative process with the job incumbent, management and an outside facilitator. The job redesign was successful; however, it did not address all of the person-environment fit factors that may affect the outcomes of job satisfaction, task performance and intent to quit. Other person-environment factors that affect person-environment fit include but are not limited to person-organization fit, person-vocation fit, person-supervisor fit and person-group fit.

> Person-environment fit has been conceptualized as to the degree that a person's needs are satisfied by the job or the degree that the job demands match the person's ability. Fit has been operationalized using a variety of content dimensions including skills, needs, preferences, values, personality traits, goals and attitudes (Kristof-Brown, Zimmerman, & Johnson, 2005a, p. 282).

Ideal person-job fit will occur when both demands-abilities fit and needs-supplies fit are high. Quadrant 2 in Figure 1 indicates this ideal or person-job fit target. "Both needs-supplies fit and demands-abilities fit are complementary, such that the combination of persona and situation 'make whole' or add to it what the other is missing" (Cable & DeRue, 2002, p. 879). A third dimension of self-concept-job fit was demonstrated to add incremental validity to predictions of meaningful work (Scroggins, 2003).



Source: Adapted from (Kristof-Brown et al., 2005a)

Figure 1. P-J Fit Conceptualized as Demands-Abilities and Needs-Supplies

Knowledge worker job designs and task assignments are interdependent parts of an organization's systems. However, efforts to improve knowledge worker productivity must consider the need to balance the process design and flexibility to adapt to the ever changing needs of the workplace.

> No one has all the answers on how to improve knowledge work, but managers shouldn't feel paralyzed. They are correct not to attempt to engineer or program knowledge work, but that doesn't mean such work lacks structure, cyclicality or leverage points for change. The keys are to maintain balance between process and practice, to treat workers doing different kinds of work in appropriate ways,

> and to focus on more than simply hiring better knowledge workers (Davenport et al.,2002, p. 30).

Riss, Rickayzen, Maus, and van der Aalst (2005) studied a process for integrating knowledge workers into an engineering change request process. Their research confirmed the need to allow the flexibility of process execution to take account of knowledge worker's characteristics and to ensure required flexibility. This need was balanced with the need to identify and apply process patterns, to evolve organizational processes and to support knowledge workers in applying best practices.

Morgeson and Humphrey (2008) developed an integrated conceptualization of a work design model that incorporated known work design factors. Their model included task, social, and contextual characteristics applied to individual jobs and teams. They presented the need for further research regarding work design. Humphrey, Nahrgang and Morgeson (2007) preformed a meta-analytic summary of work design literature and confirmed how work design can influence a host of attitudinal, behavioral, cognitive, well-being, and organizational outcomes.

> The work redesign literature has typically ignored the characteristics workers must possess to perform the roles implied by the work characteristics … research in other domains suggest that a range of knowledge, skills, abilities and other characteristics (KSAOs) are needed (Morgeson et al., 2008, p. 20).

Moregeson et al.(2008) described the importance of matching individual abilities to the job. Although the match has not been systematically addressed there is sufficient theory to suggest that the match is critical. "This would seem to be a potentially fruitful

area for research given the importance of work, design and the relative lack of attention to issues of fit in the work design literature" (Morgeson et al., 2008).

It is imperative that organizations assign knowledge workers to tasks where they are capable and motivated to perform with excellence. There are barriers that prevent job redesign and the modification of job descriptions to improve organization and process effectiveness. This study assessed the potential benefits offsetting these barriers in terms of person-job fit job satisfaction, task performance, and reduced intent to quit. A process for building a task assignment tool was developed to aid the manager with person-task assignment decisions designed to optimize person-task fit.

Person-Job Fit Gaps

Person-job fit gaps may be expected to be closed by the jobholder over time. However, the job incumbent may perceive some of the required tasks as unrewarding or unfulfilling resulting in a low level of motivation or job satisfaction. These unwanted responsibilities or tasks may drain the jobholder's theoretical energy reserves and be prioritized lower than favored tasks. If these undesirable tasks are performed then they may not be executed with the effort and skill expended on preferred tasks. If a reduction in job effectiveness results then the manager or supervisor is responsible to close the gap in order to achieve organization objectives.

Gap Identification

The supervisor may identify the job design versus job-holder characteristic gaps during the recruiting process, the jobholder's first days on the job, periodic performance

reviews, or through ongoing job-holder self-assessment. The jobholder gaps can be identified and assessed by the job's process customers, incumbent, supervisor, or work group. The gaps may be compensated for in the short term by other incumbent abilities which may be an inefficient or ineffective long-term solution.

The supervisor may plan to close the identified gaps by reassigning work responsibilities/tasks, changing the work to be accomplished, changing how work is accomplished, setting expectations for the jobholder to close the performance gaps, or by asking their work group to identify gaps and propose reassignment options. The jobholder or incumbent will frequently have non-transferable knowledge, skills, abilities or characteristics (KSAC) that are, by definition, not required for or applied to the job design. These non-transferable KSACs should be considered in the task reallocation. Figure 2 contains a supervisor's work reallocation options.

Performance Gap Closure Options and Description	
Same	Keep expectations the same and expect the job-holder to change or adapt.
Delegate	Delegate the job responsibilities to another who holds the same job description.
Rewrite	Rewrite another job description to include new responsibilities or broaden the responsibility scope to include transferred responsibility without specifically identifying them.
Reassign	Keep the same job descriptions, retain the responsibility as the supervisor and reassign tasks to other employees.
New Job	Create a new job description to complete the unfulfilled tasks. This additional job description may be assigned to a new or existing person.

Source: (Grant, 1989)

Figure 2. Performance Gap Closure Options

Best Person Fit

There is a theoretical best fit between the characteristics of the people in a work group and their environment. Environmental fit may be further defined as five primary types of person fit: group, job, organization, supervisor, and vocation. Person-job and person-organization fit are the most studied types of fit (Kristof-Brown et al., 2005a).

Reassignment

Methods for reassigning tasks must consider relevant independent person-job attributes if the reassignment goal is to optimize the effectiveness of job design through task assignment decisions. The initial task reassignment cycle for a work group may require ten percent of a *person year* and one month duration to complete. See Appendix O for a task assessment and reassignment process time estimate.

Reassignment Benefits and Costs

There are short and long term costs and benefits associated with a task assignment process as summarized in Figure 3. The reassigned task performers will go through a learning process and initially perform transferred tasks at a lower rate of productivity until they progress along the learning curve. The task reassignment process requires a task analysis stage that may initiate task redesign and implementation activities that may last beyond the task reassignment process.

Task reassignments will require more support and direction from management during the task transfer phase. The task reassignment process is expected to have a short-term cost and long term improvements in productivity, quality, job satisfaction and

employee turnover. It should improve the worker's capability to be assigned to new tasks. The process may also consider a variety of independent variables when making the assignment decisions to optimize the expected benefits of the reassignments. A myopic task and person assessment preceding a qualitative reassignment process may not achieve intended benefits.

Time Frame	+ Benefits	- Costs
Long Term	⇩ Intent to Quit ⇧ Job Satisfaction ⇧ Task Effectiveness ⇧ Work Group Productivity ⇧ Worker Skills & Capability	⇧ Sustain Job Design Process ⇧ Unaddressed Poor Person-Vocation or Organization Fits
Short Term	⇧ Task Assignment Flexibility ⇧ Task Design Improvement	⇧ Change Opportunity Cost ⇧ Labor to Train ⇧ Manage Change ⇧ Process Change

Figure 3. Expected Task Assignment Tool Application Benefits and Costs

Job Description Change

The assignment of a job description can be used to establish clear job expectations that best mate the job expectations and the incumbent's KSACs. See Appendix M for a sample job description for a lean leader. Job descriptions can also be changed to reflect the differences between job requirements and jobholder KSACs. The original job description document may be maintained and the clarified expectations unique to a person-job assignment may be documented in a position description document. See Appendix N for a sample position description for a lean leader.

Statement of the Problem and Study Purpose

Managers select people to fulfill a job description by assessing their fit to a job or person specification and specific job description requirements. The new hire's knowledge, skills, abilities, characteristics (KSAC), experiences, motivation and personal job expectations are considered in the selection process; however, the job specification definitions are frequently subjective and the assessment methods work on limited information. The gaps between the job incumbent's KSACs and the levels necessary to meet outcome expectations are expected to be closed. Changing the job design, job description or developing work group position descriptions that refine or change job expectations are often not considered valid options.

The purpose of this study was to construct a methodology and build a tool for improving task assignment and job design. Evidence was also collected to support the hypothesis that the customization of a knowledge worker's job design and description is an effective method for closing person-job fit gaps. Task assignment priority indexes (API) were developed and tested. The APIs serve as an aid for managers who are customizing person-task assignments to improve task performance. Task assignments, aided with the task assignment tool, were expected to improve knowledge worker motivation and task performance capability leading to improved organizational performance.

The root problem is summarized in the following question: How might a manager of knowledge workers, with a large variety of non-routine tasks, use job design and descriptions to more effectively and efficiently close person-job fit gaps when assigning responsibilities and work group tasks to improve group performance?

Figure 4 graphically defines the scope of the study. The flow begins with organization goals and focuses on the decision evaluating the need to modify the job description. The job description redesign decision is based on gaps between the incumbent's KSACs and those defined in the job specification or job description and the incumbent's job performance. The area within the boundary line includes the decision point, job description, and work group task assignment activities that define the study scope.

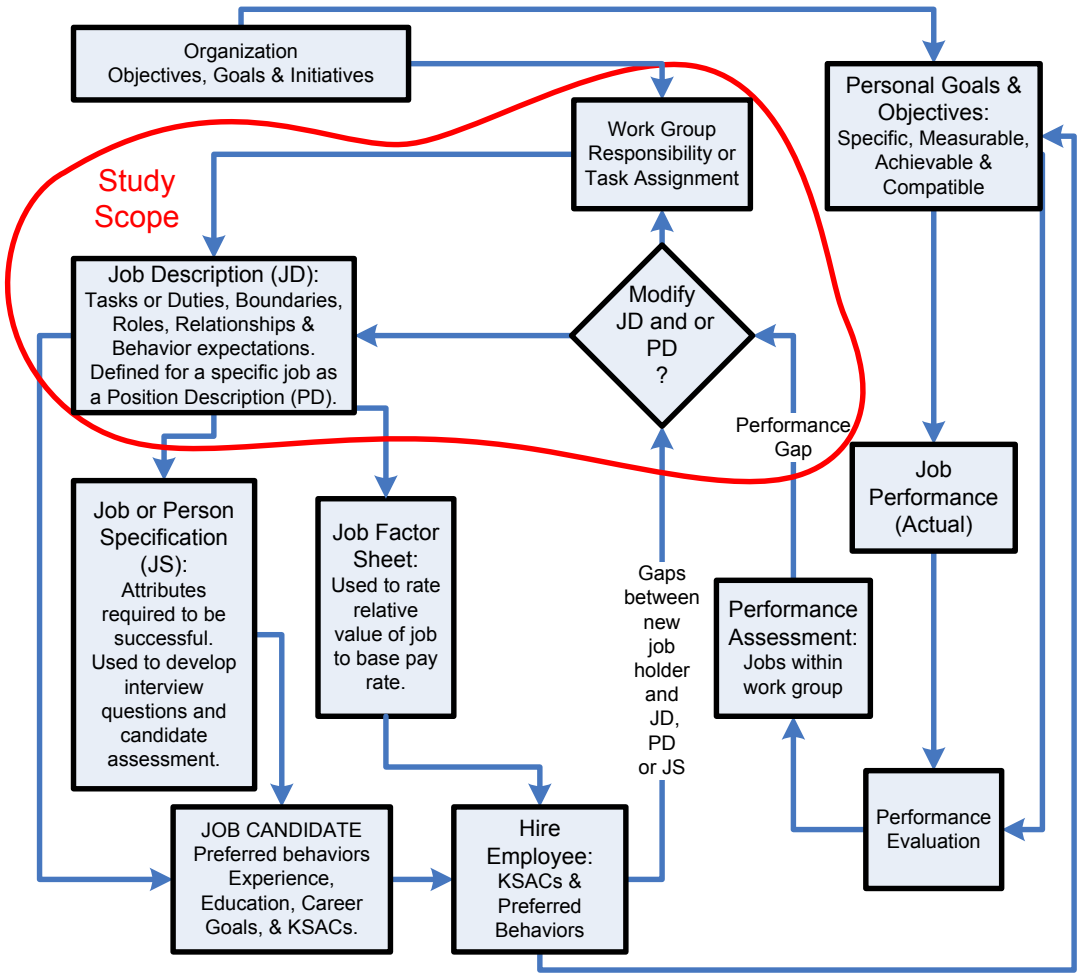


Figure 4. Job Customization Scope Diagram

The question regarding the effectiveness of customized job designs and descriptions is a research question with a practical side. This research was an effort to better understand processes for organizing and assigning tasks and roles to people. The objectives were to improve knowledge worker motivation, improve task effectiveness and lower intent to quit. The practical side of the problem was the development of a task assignment tool to serve as a job aid to be used in a task assignment decision process. The job types to be studied were categorized as knowledge workers with a large variety of non-routine tasks.

Peter Drucker identified the following six major factors that determine knowledge worker productivity. Knowledge workers must identify their own tasks, have autonomy, innovate continually, continually learn and teach, view quality as important as quantity, and should be treated as an asset instead of a cost (Drucker, 1999). Being treated as an asset requires the knowledge worker to want to work for the organization as opposed to all other opportunities. He further detailed the opportunity for knowledge workers to define their own tasks resulting in a typical doubling or tripling of productivity (1999).

The objectives of this study were designed to further understand the effect of job customization on person-job fit and the relationship with the outcome criteria of job satisfaction, task performance and intent to quit. The task reassignment process is expected to be most effective when the full work group and outside facilitation is included. Full work group participation is expected to increase decision alternatives, awareness of additional factors, reduce implementation time, and increase group ownership and acceptance. The reassignment and redesign of tasks are expected to cause work group conflict that can be managed constructively. The facilitator's role includes

helping the group effectively work through the process to reach their job redesign objectives.

Expected Results

Job satisfaction and task performance were expected to be positively correlated with person-job fit. Person-job fit would be positively correlated with job customization and be affected by personality or preferred behavior. Intent to quit would be negatively correlated with both person-job fit and job customization. Preferred behavior types would have significantly different frequencies of job customization and levels of person-job fit.

The task assignment tool was applied within a logical task assignment framework. The tool was designed to provide insight for making effective person-task assignments to improve task performance.

Definition of Terms

The terms and definitions listed below will be used throughout the document.

Abilities: General enduring capabilities for doing the job (Byars, 2006, p. 66). The quality of being able to do something; the physical, mental, financial, or legal power to perform (Soukhanov, 1992).

Complementary Fit: Conceptualization of person-job fit where the person and job are complementary with a mutually offsetting pattern of relevant characteristics (Kristof-Brown et al., 2005a, p. 288) .

Contextual Performance: Performance behaviors not related to task proficiency (Motowidlo & Van Scotter, 1994, p. 476).

Demands-Abilities Fit: The degree that worker's characteristics fill an environmental gap in the workplace. This fit may also be defined as complementary fit (Kristof-Brown et al., 2005a, p. 288).

DiSC: Acronym referring to the following preferred behavior labels: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. "The *D* and *i* styles both tend to perceive that they are more powerful than the environment. That is, they feel they have control over their surroundings and may be more assertive and pro-active. On the other hand, the

S and *C* styles both tend to perceive that they are less powerful than the environment. That is, they feel they have little direct control over the environment and may be more adaptive and reactive. The *D* and *C* styles tend to perceive the environment as unfavorable (i.e., resistant, unwelcoming, or skeptical). The *i* and *S* styles tend to see the environment as favorable (i.e., accepting, welcoming, or friendly)." (Inscape Publishing, 2004, pp. 2-1, 2-2)

Duties: One or more tasks performed in carrying out a job responsibility (Byars, 2006).

Idiosyncratic Jobs: Jobs defined by a person or work group to meet specific needs. They may be replicated or extinguished over time (Miner, 1990).

Job Analysis: Detailed examination of the tasks that make up a job, conditions under which they are performed, and what the job requires in terms of aptitudes, attitudes (behavior characteristics), knowledge, skills, and the physical condition of the employee (www.businessdictionary.com/definition/job-analysis.html, 9/17/07).

Job Description: A written description of the activities that have to be performed. Generally, a job description also contains information about tools and equipment used in the job and about the working conditions. Job descriptions specify the job content and the job context (Visser, Altink, & Algera, 1997).

Job Design: Approach to structuring the individuals' jobs so as to optimize such organizational outcomes as efficiency, quality, and productivity with such individual outcomes as satisfaction, motivation, and personal growth. The methods that management uses to develop the content of a job, including all relevant tasks, as well as the processes by which jobs are constructed and revised… (Luthans, 2005, p. 480).

Job Specification: Documents specific skills, competences, knowledge, capabilities and other physical and personal attributes one must have to perform the job successfully (Visser et al., 1997).

KANO Analysis: Kano analysis is a quality measurement tool that is used to determine which requirements are important. There are four types of characteristic reactions: *Surprise & Delight*, *More is Better*, *Must Be* and *Dissatisfiers*. (www.isixsigma.com/dictionary/Kano_Analysis-263.htm, 11/08/07).

Knowledge: Identifiable factual information necessary to perform the job (Byars, 2006). Familiarity, awareness, or understanding gained through experience or study (Soukhanov, 1992).

Knowledge Worker: People with a high degree of education or expertise whose work primarily involves the creation, distribution, or application of knowledge (Davenport et al., 2002).

Manager : Supervisor

Multivariate Measurement: Use of two or more variables as indicators of a single composite measure (Hair, Anderson, Tatham, & Black, 1995).

Needs-Supplies Fit: The degree that worker's needs are met by the workplace environment because they are similar. This fit may also be defined as supplementary fit (Kristof-Brown et al., 2005a).

Non-Routine Work: Job characterized by a large number of non-repeating tasks that cannot be broken down into elements that can easily be taught (Liker & Meier, 2007).

Person-Environment Fit: The compatibility between an individual and a work environment that occurs when their characteristics are well matched (Kristof-Brown et al., 2005a).

Person-Job Fit: The match between the abilities of a person and the demands of a job or the needs/desires of a person and what is provided by the job (Edwards, 1991).

Person-Organization Fit: "The compatibility between people and organizations that occurs when at least one entity provides what the other needs, they share similar fundamental characteristics, or both" (Kristof, 1996, pp. 4-5).

Perceived Fit: An individual's direct assessment of their fit to the environment (See Subjective Fit)

Position Description: Describes specific job tasks and responsibilities in more detail than the corresponding Job Description (Grant, 1989).

Position Specification: See Job Specification

Promotability: The likelihood of a jobholder to be promoted to jobs at a higher grade level (Smart, 1999).

Responsibilities: Obligations to perform certain tasks and assume certain duties (Byars, 2006).

Self-Concept-Job Fit: The degree that job tasks match the individual's self-concept. If there is a good fit then the individual will experience work as meaningful (Scroggins, 2003, p. 2).

Skills: Specific proficiencies necessary for performing the tasks that make up the job (Byars, 2006). Proficiency, facility, or dexterity that is acquired or developed through training or experience (Soukhanov, 1992).

Skills Inventory: List of basic employee information including certain characteristics and skills (Byars, 2006).

Subjective Fit: An individual's assessment of variables that are indirectly related to environmental fit. (See Perceived Fit)

Supplementary Fit: Conceptualization of person-job fit where the person and the environment are similar (Kristof-Brown et al., 2005a, p. 288).

Task: Consists of one or more elements; one of the distinct activities that constitute logical and necessary steps in the performance of work by an employee. A task is performed whenever human effort, physical or mental, is exerted for a specific purpose (Byars, 2006).

Task Quotient: The Task-Quotient (TQ) is the mix or portions of time spent performing three task types: routine (repetitive), troubleshooting (problem solving) and project (planning). In theory as the TQ is aligned closer to the individual's preference, their level of satisfaction increases (Gazzara,2003).

Organization of the Remainder of the Study

Chapter Two contains a review of the literature that identifies key facets and background relating to job description design, task assignment methods, customization, and lean leader competencies. The relationship among job competencies, job descriptions, job specifications, and employee selection is explored. Methods for closing performance gaps are also explored.

Chapter Three describes the four study objectives. There are two parts of each objective.

Chapter Four consists of a description of the study methodology that includes the design of the study, sample and populations, the survey instrument, data collection procedures, and data analysis procedures.

Chapter Five presents the study results. Results include a descriptive review of the collected data, differences between the subject groups, demographics, an assessment of position description value, a validity assessment, a person-environment fit measurement comparison, and variable correlations. The results chapter also contains an analysis and interpretation of what was found in the survey data, limitations, conclusions drawn from the analysis, a recommendation for customizing job descriptions as position descriptions, summary, contributions, implications, and suggestions for further research.

CHAPTER II

LITERATURE REVIEW

Overview

Job design is the umbrella topic under which job customization falls. Job design is an approach to structuring jobs to optimize organizational outcomes. Individual outcomes include satisfaction, motivation, and personal growth (Griffin & McMahan, 1994).

Job motivation and task performance are two closely linked outcomes of job design. Griffin and McMahan (1994) described job motivation as one of the most common outcome variables studied in relation to jobs. Studies that do not explicitly include motivation often consider other variables related to motivation such as contextual performance, satisfaction, effort, and absenteeism. Motivation and job satisfaction are closely linked as described by Griffin and McMahan (1994).

> The goal of some approaches has been to learn how to design jobs so as to improve motivation. In other instances, the presumed relationship has been more indirect and the focus has been on improving related phenomena such as job satisfaction or organizational commitment. The basic thrust of most job design theory and research has rested on the premise that job design and motivation are linked. The implicit belief that has guided this work has been that the design of jobs can be altered so as to motivate job incumbents to work harder, do higher quality work, do more work, and be more satisfied as a result of having worked (Griffin & McMahan, 1994, p. 24).

Job description customization is discussed in literature using the following terms:

- Adaptation (Miner, 1990).
- Carving (Griffin, 2002).
- Crafting: Physical and cognitive changes individuals make in the task or relational boundaries of their work (Wrzesniewski & Dutton, 2001).
- Idiosyncratic jobs - Jobs created around specific people (Miner, 1990).
- Job diffusion – Imitation of new jobs by other departments (Miner, 1990).
- Ecology of jobs (Miner, 1990).

This literature review focuses on the relationships between job design customization, person-environment fit, preferred behavior, job documentation and the outcomes of job satisfaction, task performance and intent to quit. The study of these relationships with job design customization was not found in the literature review. Job customization is operationalized as the change of task, roles, or responsibility assignments to better fit the job incumbent's knowledge, skills, abilities or characteristics.

Job Design Customization Model

A job customization model was developed based on the literature review. The model is depicted as an influence diagram in Figure 5 where arrows denote an influence. The model variable categories include: outcome criteria, person-environment fit, job customization, job description, preferred behavior, and demographics.

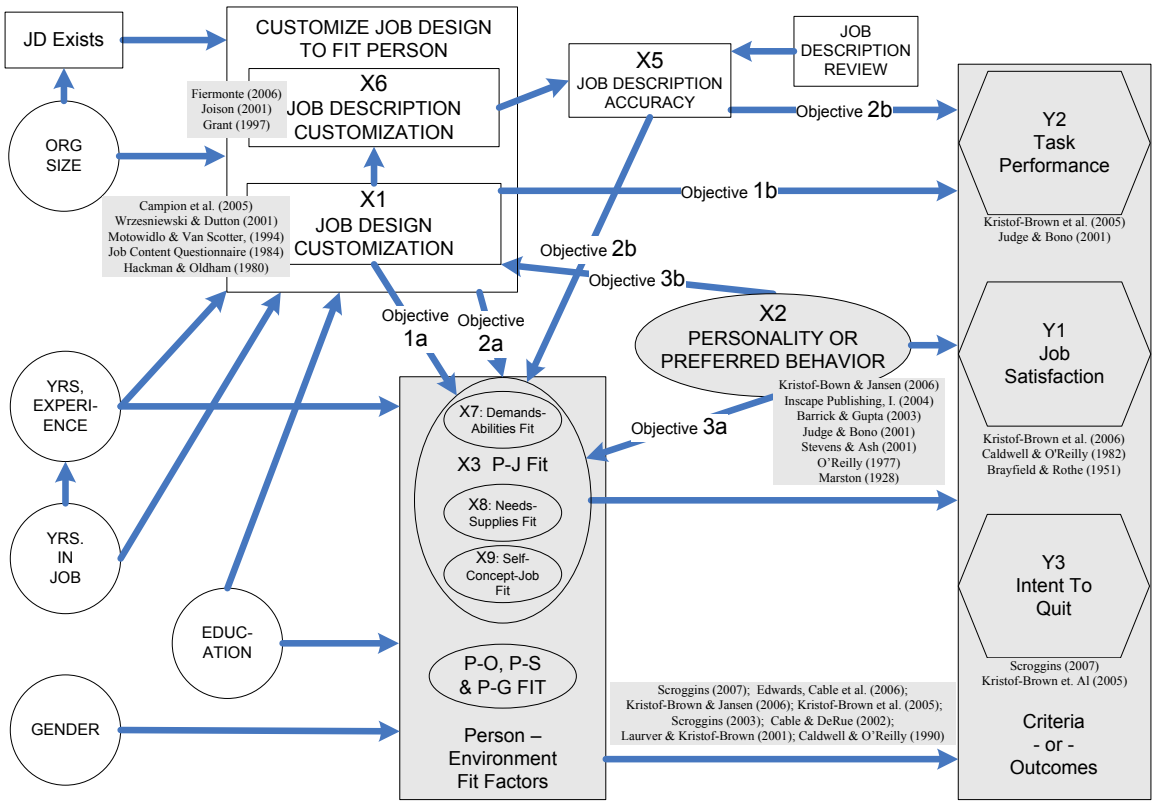


Figure 5. Model: Job Customization Influence Diagram

Variable Relationships

The following variable relationships were previously documented in literature. The variable definitions are found in Figure 6.

Y1 & Y2

There is a weak relationship between job satisfaction and objective measures of task performance (Lauver & Kristof-Brown, 2001). However, a meta-analysis surprised the research team when person-job and person-organization fit had a stronger correlation than any combination of person-organization, job, supervisor, or group fit (Kristof-Brown et al., 2005a). Other meta-analytic studies have shown a stronger correlation (Judge &

Bono, 2001).

Y1 & Y3 & X3

Intent to quit demonstrated a negative correlation to the following variables in ascending order: Y1 (-0.68), P-O fit (-0.53), and X3 (-0.31). No significant correlation was demonstrated with task performance (Lauver & Kristof-Brown, 2001).

Y1 & X1

Satisfaction with the work itself has shown strong correlations to the dimensions of Hackman and Oldham's (1980).

X1 & X3

The positive relationship between skills and person-job fit were established by Edwards (1991).

X1 & Y1 & Y2

Holland (1985), presented the argument that satisfaction and performance are enhanced when a person selects an occupation that is compatible with his or her traits and skills.

X2 & Y2

Personality is expected to not have an impact on task performance and experience because personality variables are more highly correlated with contextual performance

than with task performance (Motowidlo & Van Scotter, 1994). Contextual performance is more closely correlated to person-organization fit.

X2 & X3

Two of this study's four survey items that measure job-fit are personality, temperament or preferred behaviors questions: *My personality is a good match for this job* and *I am the right type of person for this type of work.* The relationship between personality to broad job classifications was established by O'Reilly (1977).

X3 & P-O fit & Y1 & Y2

A meta-analysis of both person-job fit and person-organization fit measured both perceived overall performance and perceived job satisfaction. A significant correlation between job satisfaction and both person-job fit and person-organization fit exists but not for overall performance (Kristof-Brown et al., 2005a). The relationships between P-J fit and P-O fit and the outcome variables of intent to quit, job satisfaction and task performance were studied by Lauver and Kristof-Brown (2001).

X3 & Y1

Job satisfaction was more strongly related to person-job fit than the three other components of person-environment fit which are person-organization, person-supervisor or person-group fit (Kristof-Brown et al., 2005a).

X3 & X7 & X8

Both needs-supplies fit and demands-abilities fit are complementary, such that the combination of person and situation *make whole* or add to what the other is missing. (Cable & DeRue, 2002)

X7 & X8 & X9

Scroggins (2003) showed significant correlations between demands-abilities fit, needs-supplies fit and self-concept-job fit. Cable and DeRue (2002) showed a strong correlation between demands-abilities fit and needs-supplies fit.

X7 & X8, X9 & Y1

Job satisfaction is the result of rewards and valued job outcomes received as the result of good performance and not the result of performance itself (Scroggins, 2003). Scroggins concluded that needs-supplies fit was strongly related to job satisfaction. Demands-abilities fit had a low correlation with job satisfaction. Self-concept-job was highly correlated with job satisfaction but not as high as needs-supplies.

X7 & X8 & X9 & Y2

The Kristof-Brown et al. (2005a) meta analysis showed positive correlations with measures of overall performance but the results were not significant. The study results vary greatly based on the method used to assess performance. Scroggins (2007) showed no correlation between his job performance measure collected from performance ratings and any measure that he collected.

X7 & X8 & X9 & Y3

Cable and Derue (2002) and Scroggins (2003) both showed low correlations between needs-supplies or demand-abilities fit and continuance of organization commitment. Scroggins (2003) also showed lower correlations between self-concept-job fit and continuance of organization commitment. The Kristof-Brown et al. (2005a) meta analysis showed a negative relationship between needs-supplies fit and intent to quit and a weak relationship between demands-abilities fit and intent to quit.

Experience & Y2

Experience is more highly correlated with task performance than with contextual performance (Motowidlo & Van Scotter, 1994).

History

The process of job redesign frequently includes the job descriptions, job analysis, job specifications, performance gap identifications, and a process for improving the design. Job descriptions have been seen as constraints that limit the flexibility of an organization to adapt and change. The development of job descriptions is expected to provide long term gains and the effort to maintain them may seem unfruitful in a fast-paced and changing environment.

> In the mid-1960s and early 1970s job descriptions were shunned somewhat as people began to see them as primarily a symbol of bureaucracy and essentially a constraint on normal employee growth and development, as well as a factor limiting what management could do in the organization in response to demands for rapid change (Grant, 1989, p. 1).

The option of eliminating job descriptions to facilitate accelerated organization change might be considered valid. Bakke (2005), in his bestseller book titled *Joy at Work*, describes how people with boxed-in job descriptions present a significant organizational problem because they have few opportunities to make decisions. The referenced organization communicated values included treating employees as full-fledged adults capable of making sound decisions. He also clearly supported the need to define job responsibilities, role definition and decision making boundaries for each person or group. It appears that the referenced organization would benefit from clearly defined and customized job descriptions designed and maintained to support his organization.

Early Approaches to Job Design

Adam Smith (1776/2007) documented in his book *The Wealth of Nations* methods to increase the capacity for making straight pins through the assignment of small groups of repeated tasks. Frederick Taylor (1911) and Frank Gilbreth (1911/2008) refined task design and their work has been labeled within the field of scientific management. Scientific management works on the premise that jobs broken down into standardized best methods and assigned to specialists improve productivity, output, predictability and quality. Ideally each worker was assigned a job where their natural abilities enabled them to be most productive when trained to the best method. Scientific Management promised to profit the worker, the business stakeholders and society in general by maximizing output per worker.

In the 1950s and 1960s job rotation and job enlargement were responses to the negative sides of scientific management. These approaches were later incorporated into

the job enrichment model. Herzberg's (1968) two-factor *Hygiene and Motivators* theory of motivation assumed that the job must be designed to provide opportunities for achievement, recognition, responsibility, advancement and growth to motivate people. The theory had seven principles for vertical, as opposed to horizontal, job loading. The theory overview can be found in Appendix H. The seventh principle recommends assigning specific tasks to allow the worker to be an expert and the fourth recommends allowing job freedom for defining how they get their work done. "Some employees have expressed preference for higher pay rather than enriched jobs, and others enjoy their current patterns of on-the-job socialization and friendships more than they do increased responsibility and autonomy. Essentially, job enrichment can inhibit a person's social life at work" (Luthans, 2005, p. 484).

Job Characteristics Theory

Hackman and Oldham's (1980) "Job Characteristics Theory" theorized that five core job dimensions (skill variety, task identity, task significance, autonomy, and feedback) influence three critical psychological states (experienced meaningfulness of the work, experienced responsibility for outcomes of the work, and knowledge of the actual results of work activities). Figure 6 presents the relationships among the key variables in the Job Characteristics Model.

The three psychological states do not cause workers to be internally motivated, to perform well, or to experience job satisfaction; however, they do create conditions that

reinforce repeated high internal work motivation, high quality work performance, high satisfaction with the work, and low absenteeism and turnover (Hackman & Oldham, 1980). This study measured the outcomes of job satisfaction, task performance and intent to quit which are similar to high internal work motivation, high quality work performance, high satisfaction with the work and low absenteeism and turnover.

Job Characteristics	Psychological states	Personal & Work Outcomes
Skill variety	Meaningfulness	High motivation
Task identity		High quality work
Task significance		High satisfaction with work
Autonomy	Responsibility for outcomes	Low turnover/absenteeism
Feedback	Knowledge of results	
Moderated by growth need and knowledge, skills & abilities to do job and contextual satisfaction.		

Source: Hackman and Oldham (1980)

Figure 6: Job Characteristics Model

Oldham and Hackman (2005) proposed a motivating potential score (MPS) that used a checklist and equation with five core job dimensions as independent variables. He later challenged the logic of the equation multipliers but the relationships remain sound (Oldham & Hackman, 2005). A well-designed job with motivating potential will not motivate the incumbent to perform if there are KSAC gaps. Hackman and Oldham's (1980) Job Characteristics Model uses the Job Diagnostic Survey to measure the Motivating Potential Score (MPS) of job designs by assessing three psychological states. A higher MPS score is correlated to higher motivation, work quality, work satisfaction and lower turnover or absenteeism. However, Hackman and Oldham (1980) demonstrated that the correlation between high MPS scores and job satisfaction or work

effectiveness measures was moderated by the incumbent's growth need, contextual satisfaction and the degree that the incumbent's knowledge and skill matched those required by the job.

Interdisciplinary Approaches to Job Design

Michael Campion (1988) made the following conclusion "different approaches to job design influence different outcomes, each approach has costs as well as benefits, trade-offs may be needed, and both theory and practice must be interdisciplinary in perspective" (p. 1). Interdisciplinary perspectives of job design include industrial engineering, industrial psychology, organizational behavior, human factors engineering, and work physiology. The four distinct approaches include the motivational, mechanistic, perceptual-motor, and biological approaches. The perceptual and biological approaches are unrelated to this project.

The interdisciplinary perspective was introduced in concert with the Multi-method Job Design Questionnaire (MJDQ) measurement instrument (Campion, 1985). The MJDQ is a self-reported 48-item questionnaire that assesses job elements associated with each job design approach. Campion, Mumford, Morgeson and Nahrgang (2005) believed that an interdisciplinary approach is necessary because the approaches have competing outcomes. An obvious example is efforts to standardize work within lean operations to improve productivity and quality with the undesirable effects of reduced autonomy and decision-making authority.

Motivational Approach

The motivational approach attempts to design work to increase skill and ability requirements to improve job satisfaction, motivation, involvement and job performance. Negative aspects of this approach include difficulty finding the right people, significantly longer training times and higher compensation requirements (Campion & Berger, 1990). "Motivating jobs may require such higher levels of involvement and commitment that employees may be faced with mental overload, stress, fatigue, and lower output quality" (Griffin & McMahan, 1994, p. 27).

Mechanistic Approach

The mechanistic approach can be characterized as classic industrial engineering and scientific management. The techniques of time study, motion study, and work simplification are often applied. The early foundation of this approach was developed by Taylor (1911) and summarized by Gilbreth and Kent (2008). The early foundations include the basic ideas and arguments from scientific management and time and motion study (Campion, 1988). The approach focuses on improving the efficiency with which jobs can be performed. Jobs that are constructed according to the mechanistic approach require less training and are less expensive to staff. In essence, the jobs are simplified and have lower levels of responsibility. With mental demands being lower, output quality may increase and compensation requirements may be reduced (Campion, 1988). "The mechanistic approach may carry with it additional costs. These costs include lower job satisfaction and motivation due to boredom brought on by repetitive, simple tasks. In addition, health problems may also result from the physical

demands associated with repetitive, machine-paced work" (Griffin & McMahan, 1994, p. 28).

Standardized work and effective job instruction methods are core components of lean manufacturing initiatives. Liker and Meier (2007) confirmed, in their book *Toyota Talent,* the importance of job analysis, task breakdown, key point identification and the effective transfer of knowledge to be key elements of a successful lean transformation. Lean leaders promote and value job analysis, standardization and instruction. Task standardization frees up workers to creatively improve tasks and to implement sustainable changes.

Job-Role Differentiation

The role literature emphasizes the process whereby the expected set of behaviors called a role is established. Role assignments are part of a job description and formalization of emergent tasks from role assignments fits within the scope of job customization.

> A job is regarded as a formal set of task elements influenced by an organization's prime beneficiaries. Roles include both formal and emergent task elements. An emergent task element may eventually evolve into a formal task element if there is consensus among members of a role set that the element is necessary or if the prime beneficiaries decide that the task should be formally established for all job incumbents (Griffin & McMahan, 1994, p. 31).

Person-Job Fit

Person-job fit is one dimension of person-environment fit. Job satisfaction is most strongly influenced by person-job fit (Kristof-Brown et al., 2005a).

> P-J fit has strong correlations with the three primary attitudes studied in the fit literature: (.56) with job satisfaction, (.47) with organizational commitment, and (-.46) with intent to quit. P-J fit has a moderate relationship with the attitudes of coworker satisfaction (.32), supervisor satisfaction (.33) and organizational identification (.36). It has a modest correlation with overall performance (.20) and is correlated somewhat more strongly (-.28) with indicators of strain (Kristof-Brown et al., 2005a, pp. 299, 306, 309).

Figure 7 displays the frequently studied Person-Environment fit types of person-job and person-organization. The Venn diagram in Figure 7 would indicate a perfect fit between the person, job and organization if the three concentric circles were overlapping with equal size.

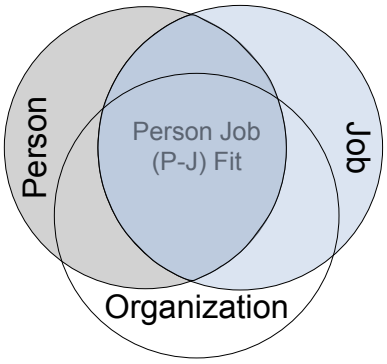


Figure 7. Person-Job-Organization Fit Venn Diagram

The literature review confirmed the expected strong positive relationship with person-job fit and job satisfaction and a weaker relationship between person-job fit and

overall task performance. In a project that evaluated person-job fit and person-organization fit, Lauver & Kristof-Brown (2001) confirmed a weak relationship between job satisfaction and objective measures of task performance. The expected strong negative correlation between person-organization fit and intent to quit was demonstrated. A later meta-analysis of both person-job fit and person-organization fit measured both perceived overall performance and perceived job satisfaction (Kristof-Brown et al., 2005a). There was a significant correlation between job satisfaction for both fit types but not for overall performance as summarized in Table 1; however, there were more job satisfaction than overall performance measure studies included in the meta-analysis.

Table 1. Meta-Analysis: Person-Job and Person-Organization Fit

Outcome Variable	Fit Type	Number of Studies	Lower 95% CI	Upper 95% CI	ρ
Job Satisfaction	Person-Job	23	.23	.67	.58
Job Satisfaction	Person-Org	30	.23	.67	.56
Overall Performance	Person-Job	3	(.25)	.61	.22
Overall Performance	Person-Org	7	(.10)	.30	.12
Intent to quit	Person-Job	11	(.65)	(.15)	(.49)
Intent to quit	Person-Org	24	(.61)	(.25)	(.52)

Source: Correlation coefficients from Kristof-Brown (2005a). Person-Job Fit Meta-Analysis
Note: CI interval ranges for Person-Job and Person-Org versus Job satisfaction were both .23 to .67.
ρ: estimated true correlation coefficient

Job Descriptions

Job descriptions are developed through the job analysis process and are the primary source for developing job specifications used to match people to jobs. Job descriptions are a fundamental vehicle for assigning tasks or groups of tasks. They are an effective means for an organization to communicate the expectations of each interdependent job when they are effectively deployed and maintained.

Frederick Taylor (1911) grouped jobs into the two classes of management and workmen. Management plans ahead and workmen execute the tasks. Best methods for executing routine tasks are established and documented. Management works side by side with the workmen, helping, encouraging, and smoothing the way for them. *Smoothing the way* means increasing the percent of the workday that the worker is performing value added tasks and producing work that conforms to standards. Workmen who fail to meet the standards work with a competent teacher who shows them exactly how the work can best be done. The teacher guides, helps and encourages. They also study the possibility of shifting the workman to another class of work for which he or she is better suited either mentally or physically.

> The time is fast going by for the great personal or individual achievement of any one man standing alone and without the help of those around him. And the time is coming when all great things will be done by that type of cooperation in which each man performs the function for which he is best suited, each man preserves his own individuality and is supreme in his particular function, and each man at the same time loses none of his originality and proper personal initiative, and yet is controlled by and must work harmoniously with many other men (Taylor, 1911, p. 74).

Each job is part of an interdependent system. Job descriptions are the basic building blocks of an organization's system. Every job design has customer and supplier relationships as part of an interdependent system.

> When employees are left alone without job definition, self-interest will dominate their organizational behavior. Job descriptions show how work is designed and work design is a primary determinant of employee-job performance and of employee satisfaction. They confirm that work is planned, and when an organization's work is planned there is a much higher probability of organizational success then when things are left to chance. Without job

> descriptions there is an absence of definition. This means that employee motivation, training, staffing, and performance control are not really possible – indeed, management is not really possible (Grant, 1989, pp. 6-7).

The use or misuse of job descriptions has been criticized. The criticism is often targeted toward their usability, misuse and job scope limitations. Job scope limitations can be either real or perceived. Recent market place changes include shorter product life cycles, increased value expectations, more specific customer requirements, increased competition and higher value expectations. These increased expectations demand flexible products, processes and people. The job description describes the effective application of people within this new environment.

Choppin (1996), a Total Quality Management consultant, suggested negotiating accountabilities and responsibilities, rather than directing how work is accomplished. He believed that employees should share a common direction, and be free to maximize their contribution toward that direction.

> Most job descriptions are proscriptions. They proscribe and limit people's activity, rather than enhance and open it. Again, they are usually imposed and are the job as seen through the eyes of the supervisor or manager. There is an implicit assumption that they know best what another person should be doing, and indeed how to do it. It is so easy to close people down, to get the worst from people (Choppin, 1996, p. 43).

Choppin (1996) suggested outlining accountabilities and responsibilities rather than defining how the job should be performed. Less prescriptive job documentation allows for the sharing of a common direction and contribution maximization.

The Toyota Production System has developed and used job descriptions to support an organization's mission of satisfying customers and promoting creativity. "The

Toyota Production System is a highly structured environment that was full of standardization, but with a great deal of individual initiative and creativity. The creativity was channeled to improve standards" (Liker & Meier, 2007, p. 94). Knowledge workers such as product engineers within the Toyota system have a wide variety of standard processes and rules.

Adler (1999) referred to this form of bureaucracy as enabling, as opposed to coercive. Coercive forms require documentation to ensure employees who are stubborn, disobedient, incompetent, or irresponsible do the right thing. Enabling bureaucracy documents a system to support the work of the *doers* in an enabling way as opposed to bolstering the authority of the *higher ups*. The enabling bureaucracy is viewed as a tool to better enable task performance as opposed to a weapon used by their superiors (Adler, 1999). An enabling bureaucracy will document job and process expectations in a standard way that facilitates improvement. Job descriptions define task assignments for each job and position. Job design negotiations and improvements must be documented to communicate, train, and form the basis for future change.

What are the key forces that resist modifications of job descriptions? One example is the practice of establishing job grades and pay rates based on job description content. Supervisors may have multiple people reporting to them with different job descriptions. The job descriptions may include different *job grades* within the same job description. If not job grades, there may be different pay rates for the same job description with different output expectations. A position description that modifies the job description expectations may affect the job rating.

Every employee's job has a description and role within the organization. The description may be documented or undocumented. It may be defined by the job incumbent, supervisor or even co-workers within the work group. The job designed by the incumbent may match the desires of the incumbent but often does not best match their organization's needs. "Employees naturally gravitate toward pursuit of self-interests while at work and toward the expenditure of their effort and time on the more desirable tasks. This tendency often leads to misdirected effort, from the company's point of view" (Grant, 1989, p. 101).

Written job descriptions have often not played a significant role in the prescriptive assignment of tasks. A variety of factors contribute to this. Grant (1989) lists 21 reasons why job descriptions are often not used. Some of the relevant reasons include: lack of understanding, perception of inflexibility, job escapes definition, use inconsistency, lack of adherence, mechanical use or no motivation for the supervisor to use them. Job descriptions are also not used due to perceptions that they inhibit the process for selecting the perceived best person for the job or organization and that the job descriptions should not be built around the individual. Some managers intend to hire people with a good person-organization fit and a relatively lower person-job fit. They assume that the person will be able to perform their initial job assignment effectively.

> A number of managers disregard job descriptions in hiring. They say that what they are looking for is a candidate with the right attitude, a willingness to learn, and an aptitude for the work. Experience and developed skills relative to particular duties are not important. Besides, the intent is to mold the job to fit the individual's unique talents anyway (Grant, 1989, p. 102).

Should the job be molded to the person? If the jobholder is not fulfilling the responsibilities and tasks defined in the job description then there is a performance gap. How are the tasks fulfilled if the incumbent is not able or motivated to complete them effectively? Molding or customization of job descriptions is proposed as a partial answer to these questions.

> Organizations will want to adapt jobs to incumbent strengths and weaknesses. Perhaps certain duties should be eliminated from one's job and assigned elsewhere if these duties, for one reason or another, cannot be performed proficiently by the worker. Perhaps the worker should be assigned other tasks, not normally part of the job, to take advantage of special skills or knowledge he or she has. Also, as the employee grows in the job, job content should evolve to take advantage of the increased capacity of the worker (Grant, 1989, p. 102).

A job description is a group of tasks, roles and responsibilities assigned to a job title and expected to be performed by a single person. A job description might be a description of roles and competencies written in behavioral terms. Competencies are clusters of skills (Joison, 2001). Specific expectations are set by an individual manager where they define the skills and tasks that make up a job. Documentation of the job detail for a specific position will be defined as a position description for the purposes of this paper. See Appendixes M and N for examples of a job description and position description for a lean leader.

Job descriptions describe twelve different job characteristics according to Grant (1989). One of the characteristics is the degree of specificity by which the jobholder can mold the job to better match their specific needs and characteristics. Appendix I contains the complete listing of the characteristics.

Reasons Job Descriptions are Not Used

Job descriptions may not be created, used, or maintained because a supervisor may feel that the use of job description to design work and manage improvement is not warranted. The following are some of the common reasons for not using job descriptions: Job descriptions are used to determine the pay rate; an individual job position or description change may change the job classification that is assigned to a pay rate scale. The number of job descriptions may be limited to increase flexibility for reassignment, clearly show alternate career paths, or reduce human resources department work. The supervisor may feel that the investment of time required to write and update the job description is not warranted. Policies frequently do not require periodic job description review. Or, it is often only under duress that workers perform less than desirable responsibilities that may be included in their job description.

There are additional reasons why supervisors would neglect the process of identifying and closing responsibly gaps. The supervisor may have poor writing skills. The outcome of *what* the job-holder does may be higher weighted than *how* the job-holder accomplishes it. The supervisor may reward goal attainment without regard to how the incumbent fulfills their responsibilities.

Job Specifications

Job or person specifications document the knowledge, skills, abilities, experiences and personal characteristics expected for job success. A job specification example is included as Appendix D. The specifications should be valid, meaning they predict job success, and reliable, meaning they produce consistent results over repeated measurements (Byars, 2006). Often the person selected for a job partially fulfills the job expectations. Grant (1997) surveyed 200 non-managerial employees in 60 businesses regarding the usefulness of their job descriptions. Eighty-five percent reported their job descriptions as deficient and about 70 percent said key elements of their job were left out of their job descriptions. The job description should explicitly communicate the key things that the job incumbent is expected to do, or to avoid doing (Grant, 1997).

The job specification is written to improve the person-job fit. Employee information is necessary to establish either the job fit or gap. An existing employee skills inventory list may be maintained to identify their accomplishments, skills and characteristics. The interview process, reference checks, resumes and job application forms are common sources of employee information referenced during the selection process for new employees. It is assumed that the new job incumbent's person-job gaps should be identified if they are expected to be closed.

The job selection process uses job specifications to identify the knowledge, skills, abilities and characteristics (KSAC) that the jobholder should possess in order to fulfill the job description requirements. Some abilities are required immediately, some must be acquired over time and some may be compensated for by other abilities. Job incumbent

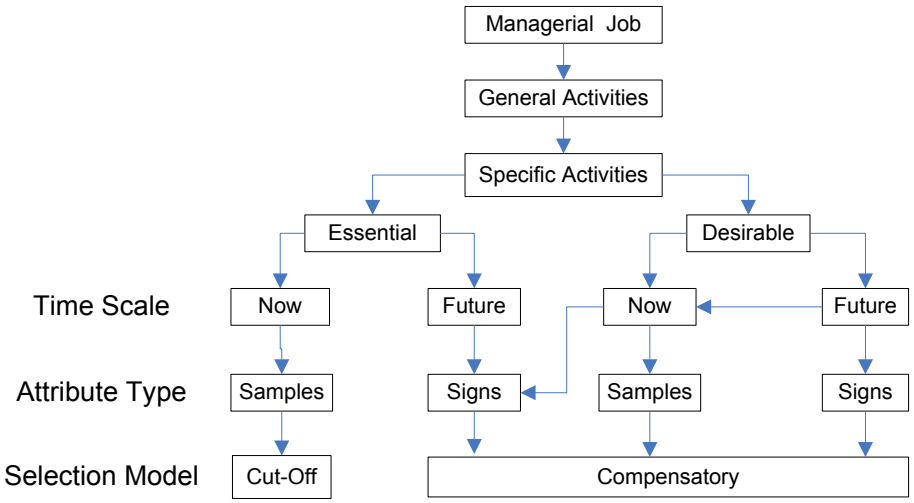
KSAC variation results in gaps between a job incumbent's capabilities and those required by the job.

Wilkinson and Zwaneberg (1994) evaluated the person or job specification development process and developed an expert system to define the job specification development process. They defined a job description as a statement of the job to be done, in terms of tasks or activities and a job specification as the attributes of a successful applicant. The job specification is normally derived from the job description. Job specifications describe the attributes of a person necessary to do the job. The attributes vary in importance and the ability to be measured. Job specification measures need to be consistent or reliable and accurate or valid. The job specification details the levels of skills, abilities, knowledge, and experiences required to do the job well or to standard. Qualifications in the job specification include the experience and education necessary for the employee to acquire the skills, knowledge, and abilities necessary to perform at standard. Wilkinson and Zwaneberg's (1994) sample of job specifications reviewed for managerial jobs had from four to 70 desired characteristics with an average of 16.

The job specification model is presented in Figure 8. A cut-off selection model disqualifies job candidates if they fail to meet essential attribute minimum requirements. High evaluation scores on one attribute can compensate for low scores on another. The process looks for samples from candidates to verify they have the attributes required to perform necessary activities and signs that they will be able to develop abilities to achieve the desired activities.

A methodical process for the development of job description and job specifications is critical for the development of custom job designs and descriptions

(Wilkinson & Zwanenberg, 1994). See Appendix C for an example of a job specification.



Source: (Wilkinson & Zwanenberg, 1994, p. 30)

Figure 8. Job Specification Model

Job Analysis

Job analysis is the process by which job descriptions and job specifications are created. Job analysis subdivides jobs into tasks by means of data collection, analysis, and synthesis.

> Job analysis is usually defined as the systematic procedure of collecting and analyzing information about jobs. By using some kind of structured job analysis method, or a combination of different methods, jobs are broken down into components. Basically job analysis consists of two elements: a job description and a job specification (Visser et al., 1997, p. 2).

Many alternative job analysis methods exist. Ash and Levine (1983) evaluated seven widely used alternative methods using a critical incident questionnaire mailed to experienced job analysts. Two techniques, Task Inventory CODAP (Comprehensive Occupational Data Analysis Programs) and Functional Job Analysis, were rated best for developing job descriptions (Levine et al., 1983).

Job Customization – Incumbent Initiated

Some degree of job customization by the job incumbent will happen in lieu of a formal effort. Wrzesniewski (2001) described job description customization by an incumbent as "job crafting." Job crafting is initiated by an employee to assert control over their work, remain engaged, to create a positive work self-image and to connect to others. An incumbent will craft their job in lieu of an intentional method due to unmet needs. She compared the "job crafting" model to other related models and justified its acceptance by comparing and contrasting the model to other related models. See Appendix E for Wrzesniewski's job crafting model and the three types of job crafting identified. The first form of job crafting listed in Appendix E might be viewed as job design customization initiated by the job incumbent.

Job Design Evolution

Miner (1990) developed a model that selectively retains jobs and implied that adaptive change can occur in the absence of clear and consistent goals. She argued that

structural evolution may occur through the turnover of jobs. Miner tested the evolution of jobs using the partial likelihood analysis of the hazard rate of *job death* among 347 formalized jobs in a large organization over a six-year period (Miner, 1991). These jobs were classified as idiosyncratic jobs. The job adaptations may or may not be documented or replicated.

> All evolutionary change processes require that there be a system for replicating activities over time, a source of variation in activities, and mechanisms which permit some activities to persist while others do not. … Idiosyncratic jobs – or jobs created around particular people rather than in the abstract – serve as a mechanism for unplanned variation in sets of job duties. Unplanned variation in task accomplishment are retained and reproduced over time. Formalized job descriptions provide consistency of behavior over time; idiosyncratic jobs provide a source of unanticipated variation with selective retention (Miner, 1990, p. 196).

Formalized Job Systems

Miner described a formal job system as one that has a job classification system, general descriptions of job groups and individual job descriptions. She described a job classification system as a powerful source of consistency of behavior and therefore a replication system. "The written job description and individual job descriptions may form expectations for incumbents, managers, and other employees" (Miner, 1990, p. 197).

Structural Evolution Perspective

The structural evolution perspective predicts that job design formalization may enhance rather than deter effective adaptation, and that organizations can adapt over time without clear initiatives to do so. "Formalization along with experimental jobs allows the

organization to adapt. The formalized job system is the organization's memory" (Miner, 1990, p. 199).

Structural Contingency Theory

Structural contingency theory argues that changing environments require more organic structures to permit adaptation to a changing environment. These arguments imply that formalization will decrease the organization's ability to adapt to changing environments (Miner, 1990).

Situational Leadership

The Situational Leadership Model for developing and coaching people is predicated on the understanding of the readiness level of people whom the leader is attempting to influence (Hersey & Blanchard, 1993). Hersey and Blanchard (1993) define a changing leadership style by the degree of task behavior and relationship behavior exhibited by the leader. Task behavior is defined as the degree that the leader details the tasks and responsibilities to be performed. Relationship behavior is defined as the degree of two-way communication. The leadership style is defined for each task or group of tasks (competencies) and it changes as the learner progresses through four stages of readiness (Hersey & Blanchard, 1993). Readiness is defined as "the extent to which a follower has the ability and willingness to accomplish a specific task" (Hersey & Blanchard, 1993, p. 189). The theory is built on the assumption that well-formulated task statements are developed. Task performance is measured on both ability and willingness

to perform. Situational leadership has been a well-accepted model for coaching and developing people. "It has been a major factor in training and development programs for more than 400 of the Fortune 500 companies" (Hersey & Blanchard, 1993, p. 215). Situational leadership has well documented face validity as an effective approach for coaching workers to close task performance gaps.

Bureaucracy Risk

Weber (1968) described characteristics of the modern bureaucracy that are generally structured by rules and administrative regulations. Regular activities are assigned as official duties, authority to command the discharge of duties is distributed in a stable way, and fulfillment of the duties is performed methodically. Management is based on written documents and a staff of subordinate officials and writers. The officials and their files and materials make up a bureau. Management of the office follows stable, general rules. Knowledge of these rules constitutes special technical expertise. Officials do not own the position, but agree to fulfill the duties. Bureaucracy is tied to the availability of continuous revenues to maintain it. Detached experts are assigned to deal with complexity, specialization, and objectivity. "The individual bureaucrat is a small cog in a ceaselessly moving mechanism which ascribes to him an essentially fixed route of march" (Weber, 1968, p. 988). Bureaucracies may be seen as indispensable and impersonal, yet they are easy to steer by new management. Once new management has gained control it is easier to keep them running. Bureaucracies make radical change difficult (Weber, 1968).

Bureaucracy may be defined as the division of labor into well documented tasks where experts are assigned to fulfill them, and a management structure ensures compliance (Weber, 1968). Workers perform duties as opposed to owning their tasks and bureaucratic structures are predictable, slow to change, and less productive than those required by the marketplace (Weber, 1968). Documentation that is easy to use, maintain and change is expected to minimize the bureaucratic effect.

Lean Leader Job Design

The selection of the lean leader and their job design is critical to the success of an organization's lean transformation. Over 100 lean leader positions listed on job posting sites in September 2007 were reviewed. The job descriptions posted with the job listings were relatively simple with a variety of knowledge and skills listed. Over 50 types of job tasks were included in the job descriptions. The following job titles were identified: Business Process Lean Deployment, Kaizen/Lean Manufacturing Coordinator, Lean Coach, Lean Coordinator, Lean Engineer, Lean Expert, Lean Implementation Manager, Lean Leader, Lean Manufacturing Engineer, Lean System Manager, Lean Process Specialist, Lean Project Manager, Lean Six Sigma Coordinator, Lean Six Sigma Deployment Champion, Lean Work Measurement Specialist, and Lean Workshop Leader.

The job description samples suggest that managers of lean leaders have <u>not</u> developed a generally accepted job task and role description and have not created an operational definition of lean leader success. These observations behoove leaders to

design, document and customize the job to better match the attributes of the candidate selected.

Lean Leader Competencies

Lean leader competencies are defined in both the Society of Manufacturing Engineers (SME) and the Association for Manufacturing Excellence AME lean bodies of knowledge (BOK). Appendix G contains an outline of each body of knowledge.

Lean leader competencies are different from conventional leaders. Emiliani (2003) detailed 30 lean leader beliefs, behaviors and competencies in his article *Linking leaders' beliefs to their behaviors and competencies*. He also identified 14 competencies that are different between conventional leaders and lean leaders.

The business process engineer is another type of lean job that is recommended for redesigning business processes as part of larger business systems. Their goal is to achieve effective solutions that can be implemented and sustained. "The two logical homes for business process engineering … are the industrial engineering and business schools. The former might present the greatest opportunity to develop and offer such a program because of the current status of industrial engineering education and practice, its unique mix of human-business-technology, and the applicability of many of its courses" (Leung, 2005, p. 16).

Job Specifications for Lean Leaders

Forty lean leader job responsibilities were identified in *lean* literature. Lean leaders fulfill these responsibilities with varying degrees of priority, time allocation, commitment and motivation. The list was ranked according to importance by six experienced lean leaders who were selected by the author. The six lean leaders, from six different organizations and three different industries, rated the competencies. Each lean leader rated the importance of the competencies on a semantic differential scale from one to seven. A level one was defined as *Very Unimportant* and a level seven was defined as *Very Important*. Table 2 contains the results summary with a reference to the SME and AME Lean Body of Knowledge (See Appendix G) section that includes it. The competencies formatted with an italic font were assessed as lean leader tasks within the lean leader survey.

There are a variety of potential job responsibilities and corresponding requirements within a lean leader job description. The various task responsibilities may be grouped or packaged into sub-jobs which make the lean leader job description a good candidate for customization. The job customization process includes task reassignment, prioritization, time allocation, and fulfillment improvement plan. Lean leader job descriptions often require the application of a wide variety of roles, skills and knowledge to achieve their objectives. Job description responsibilities may require the lean leader to be an individual contributor, analyst, teacher, exhorter, facilitator, leader, strategist, motivator, innovator or delegator.

Table 2. Lean Leader Competencies

Rank	Lean Leader Competencies	Further Definition	Rating	BOK #
1	*Communication*	Speaking and writing	6.83	1.2
1	Leadership		6.83	1.1
2	*Facilitation*	Improvement teams	6.67	2.4.4
2	*Process mapping*	Flow charting including, VSM, process characterization	6.67	2.4.4
3	Change implementation support	Assist and assure expected results are achieved.	6.17	1.2
3	Feedback	To teams, steering committees, leadership, and reports.	6.17	1.2
3	Learning	Continuing and applied	6.17	
3	*Measurement*	Knowledge, design & lean system application	6.17	2.4.4
3	Problem solving	Methodical	6.17	2.4.4
3	*Teaching*		6.17	1.2
4	*Lean principles*	Knowledge and application	6.00	2.4.4
4	*Lean tools knowledge and application*		6.00	2.4.4
5	Exhortation or encouragement	Encouragement	5.83	1.2
6	Data collection & analysis		5.50	2.4.4
6	Mentoring		5.50	1.2
6	Networking	Develop contacts within the organization in a planned way	5.50	1.1
6	Project management		5.50	
6	Standardizing Work		5.50	2.4.4
6	Team Management	Charter, support & accountability	5.50	1.2
7	*Kaizen improvement events*		5.33	2.4.4
7	*Recognition & celebration*	Meaningful and motivating	5.33	1.2
7	Selling	Selling approaches & change plans to decision makers	5.33	
7	Strategic Planning	Vision setting	5.33	1.1.6, 2.1
8	*Audit*	Process, 5S, project definition or post implementation	5.17	2.4.4
8	Process knowledge	Operations and business processes	5.17	
8	Role model for lean application		5.17	1.1
8	Status Updates	Progress reporting	5.17	
8	Subject Matter Expertise	Maintained, applied and used to develop personal credibility	5.17	
9	Organization	Personal and project	5.00	
10	Cost reduction		4.50	4.2
10	Quality tools and systems		4.50	4.1
11	Documentation	Procedures, guidelines, training materials etc.	4.33	2.4.4
11	Promotion – Lean principles & application	Newsletters, articles, speaking opportunities etc.	4.33	1.1
11	Scheduling and planning		4.33	3.1
11	Supervision		4.33	
12	Benchmark		3.83	2.4.4
13	Special Projects	Not specified in JD or objectives	3.50	
14	Costing or cost accounting		3.33	3.1
14	Six Sigma Application		3.33	
15	Information systems	Expertise or administration	2.67	3.1

Italic font indicates task performance self assessed on lean leader survey. BOK # refers to Appendix G.

Models for Analyzing Person-Job Fit

"Person-environment (P-E) fit has been broadly defined as the compatibility between an individual and a work environment that occurs when their characteristics are well matched" (Kristof-Brown et al., 2005a, p. 281). Person-job fit is one of the components of person-environment fit. Kristof-Brown et al. (2005a) performed a meta-analysis, using 172 studies, that investigated the relationships between person: job, organization, group and supervisor fits. The criteria used to assess the fit included attitudes, performance, withdrawal behaviors, strain and tenure. Much of the meta-analysis was concerned with the moderators of the fit-outcome relationships and evaluating empirical evidence regarding their impact.

> Fit has alternatively been conceptualized as similarity, need-satisfaction, and demand-ability match. Further, it has been operationalized using a variety of content dimensions, including skills, needs, preferences, values, personality traits, goals, and attitudes. Strategies for measuring fit also vary widely, from directly asking individuals to report their perceived fit to researchers indirectly assessing fit through explicit comparisons of separately rated P and E characteristics (Kristof-Brown et al., 2005a, p. 282).

Kristof-Brown et al. (2005a) defined demands-abilities fit and needs-supplies fit as complementary where an individual's characteristics fill a gap in the current environment or vice versa. Demands-abilities fit is operationalized as the match between the incumbent's knowledge, skills, and abilities and the job. Needs-supply fit occurs when the incumbent's needs, desires, or preferences are met by the job. Preferred behavior or personality is a key person-environment fit moderator.

The Kristof-Brown et al. (2005a) study confirmed that direct or perceived measures of fit had stronger relationships than indirect objective measures for job satisfaction, overall performance and intent to quit. They also confirmed that the temporal or time separation of relationships had little bias on fit-attitude relationships except for organizational commitment. These findings confirm the validity of collecting participant data with a cross-sectional design that collects all the data at one point in time.

Lauver and Kristof-Brown (2001) performed a study that evaluated the relationship between employee perceptions of person-job (P-J) fit and person-organization (P-O) fit. "Person environment (P-E) fit has been positively related to individuals' career involvement, job satisfaction, organizational commitment, and career success and negatively related to turnover intentions and behaviors" (Lauver & Kristof-Brown, 2001, p. 454). They concluded that both P-J and P-O fit had a unique impact on job satisfaction and intent to quit. P-O fit was a better predictor of intent to quit than was P-J. They measured task performance objectively by using normalized performance review ratings for office personnel and driver performance was a combination of miles driven and frequency of accidents. They used regression to measure the correlation coefficients and β coefficients between the P-J and P-O fit measures and each of the variables: Job satisfaction, intent to quit, task performance and contextual performance.

Scroggins (2003) developed and tested a self-concept-job perceptual measure of person-job fit. The measure assessed the fit between the individual and the job and not the individual and organization.

> Perceptions that job tasks and behaviors were consistent with an individual's self-concept would make the performance of those tasks and behaviors meaningful. Meaningful work would increase the individual's attraction to the job and work and decrease the likelihood that the individual would engage in turnover behavior.

> The importance of self-concept-job fit was supported. Perceptions of self-concept-job fit were strong predictors of both meaningful work and intentions to leave (Scroggins, 2003, p. 201).

The study provided empirical evidence that needs-supplies fit and self-concept-job fit combined had additive effects and the greatest impact on and power for predicting meaningful work and intent-to-leave. Meaningful work was reported as a strong predictor of organization commitment, job satisfactions and intention to leave; however, it was a weaker predictor of job performance (Scroggins, 2003, pp. 190-191). Hackman and Oldham (1987) also included meaningfulness of work in their Job Characteristics theory.

Objective 1 – Customized Job Design Effect

The literature review described and measured relationships between person-job fit, job satisfaction, task performance and intent to quit. Job design processes and methods for documenting the job requirements in the form of a job description or position description are well documented. Methods to define and document person-specifications used in the selection process are defined. Selection and interviewing techniques have been developed to increase the likelihood of selecting a person with a good person-job fit. Formal and informal methods have been suggested for how jobs may be adapted or changed over time to meet changing organization needs or jobholder preferences. Processes for the adaptation of jobs initiated idiosyncratically by the jobholder or through a formal job design process were discussed.

Richard Hackman and Greg Oldham's (1980) Job Characteristic theory described

moderators that would affect the motivational properties of a job design. A gap between the individual's knowledge, skills and abilities and those required by the job are expected to result in job incumbent frustration and poor performance even though the job was designed with high motivational potential characteristics.

The person-environment fit research shows wide variation in correlations with overall performance. There were nineteen studies included in a person-environment fit meta-analysis (Kristof-Brown et al., 2005a) that studied the relationship with person-job fit. The correlation coefficient between person-job fit and overall performance had a 95 percent confidence interval between -0.19 and 0.51. As a comparison the correlation coefficient between person-job fit and intent to quit (16 studies) at a 95 percent confidence interval was between -0.15 and -0.59. Reasons for the variation include both poor objective measures of task performance and the gap between the knowledge, skills and abilities required by the job and provided by the incumbent. Job design customization is targeted at closing the person-job fit gap.

Objective 1 - Literature References

Kristof-Brown et al. (2005a) performed a meta-analysis that summarized the person-environment fit literature related to person-job, person-organization, person-group, and person-supervisor fit. Output criteria included job satisfaction, intent to quit, and overall performance. Lauver & Kristof-Brown (2001) performed a person-job fit and person-organization fit study of both hourly and salary workers. Output criteria included job satisfaction, intent to quit, and objective measures of task performance. The Job Content Questionnaire (Karasek, Brisson, Kawakami et al., 1998) is a questionnaire-

based instrument designed to measure the *content* of a respondent's work tasks in a general manner which is applicable to all jobs and jobholders in the U.S. Scroggins (2003) developed a self-concept-job fit measure that is an additive component of person-job fit with demands-abilities fit and needs-supplies fit. Scroggins (2007) confirmed an additive effect for the three types of person-job fit types on job satisfaction and intent to quit. Self-concept-fit accounted for more of the variation in intent to quit and less for job satisfaction when compared to demands-abilities and needs-supplies.

Objective 2 - Job Description Customization

The study of the effect of customized or accurate job descriptions on person-job fit or the outcome criteria variables of job satisfaction, task performance and intent to quit was not found in literature. The study of the effect of job descriptions updated as a position description to clarify the expectations of a redesigned job was also not found in literature.

Objective 2 - Literature References

Grant (1989) researched the use of job descriptions and developed a guide for their analysis, preparation and application. Grant (1997) summarized content that is frequently missing in job descriptions. Joison (2001) detailed methods for creating job descriptions that are easier to create, maintain and use by grouping tasks into clusters or duties. Fiermonte (2006) measured the effect of position description use in the hiring process.

Objective 3 - Preferred Behavior Effect

Personality has been used to assess supplementary fit in the domains of person-organization, person-group, and person-supervisor fit literature (Kristof-Brown, Barrick, & Stevens, 2005b). Kristof-Brown et al. (2005b) assessed the person-team fit for extraversion on member's attraction to the team and found a unique relationship between team level outcomes and team members' extraversion. Most studies of personality-based fit emphasize the benefits that accrue from supplementary fit, or personality similarity, between individuals and others in their social environment. Kristof-Brown and Jansen (2006) proposed first that individuals high on conscientiousness will place greater emphasis on task-related than interpersonal forms of fit. Second, individuals high on agreeableness will place greater emphasis on interpersonal forms of fit rather than task-related forms of fit.

The agreeableness dimension of personality is expected to have an impact on the type of person-environment fit that is most important to the person. "Individuals high on agreeableness may find inter-personal forms of fit (e.g. person-person, person-group) more salient than task-related forms of fit (e.g. person-job, person-vocation) because their cooperative nature and tendency to get along with others reinforces the importance of interpersonal fit. Second, individuals high on conscientiousness are likely to place greater emphasis on task-related rather than inter-personal forms of fit … because they are driven to perform effectively and efficiently on the job" (Kristof-Brown & Jansen, 2006, p. 200).

The "DiSC one" system classifies preferred behavior types. The acronym refers to the following preferred behavior labels: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. "The *D* and *i* styles both tend to perceive that they are more powerful than their environment. They feel they have control over their surroundings and may be more assertive and pro-active. On the other hand, the *S* and *C* styles both tend to perceive that they are less powerful than their environment. They feel they have little direct control over the environment and may be more adaptive and reactive. The *D* and *C* styles tend to perceive their environment as unfavorable (i.e., resistant, unwelcoming, or skeptical). The *i* and *S* styles tend to see the environment as favorable (i.e., accepting, welcoming, or friendly)" (Inscape Publishing, 2004, pp. 2-1, 2-2). The DiSC classifications enables group comparisons by type to assess possible effects on job customization, person-job fit and the outcome variables.

Objective 3 - Literature References

Marston (1928) identified what he called four "primary emotions" and associated behavioral responses, which today Inscape Publishing (2004) describes as the DiSC system for classifying preferred behavior. Kristof-Brown et al. (2005a) performed a meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. The relationship between personality to broad job classifications was also established by O'Reilly (1977). Kristof-Brown (2005a) measured the significant effect of extraversion on person-group fit. Extraversion is expected to have an effect on the frequency of job customization. Kristof-Brown and Jansen (2006) proposed relationships among conscientiousness, agreeableness and task-related forms of fit.

Objective 4a - Assignment Priority Index

Kristof-Brown and Jansen (2006) recommended a single person-environment (P-E) fit model that measured P-E fit with multiple variables such as person-job fit with: job, group, organization, supervisor, and vocation. They described the need to develop salience weights associated with each fit type. "The additive relationship implies that the salience-weighted sum of fit assessments reflects a compensatory effect between fit dimensions. In other words, good fit with one salient dimension of the environment may compensate for the lack of fit with other less salient dimensions" (Kristof-Brown & Jansen, 2006, p. 198).

Scroggins (2007) examined the additive effects of person-job fit on job satisfaction and intent to quit. He used hierarchical regression to investigate the additive effects of employee perceptions of person-job and person-organization fit. Results indicated that the effects of three types of person-job fit on job satisfaction and intent to quit were additive.

If relevant person-task fit factors are additive then a weighted composite index might be developed to support the person-task assignment decision making process. The literature included the following task assignment decision criteria factors affecting person-task fit.

Performance

Smart (1999) coined the term *topgrading* as a verb that describes the process of filling every job with an *A* player, at an appropriate compensation level. Smart (1999)

defined *A* players as the top 10 percent of all talent who are available and willing to accept a job offer. By experience he estimated that 10 percent of available job applicants are *A* players, 25 percent *B* players, and 65 percent *C* players. He offered a structured interview methodology (Chronological In-Depth Structured Interview Guide) to increase the likelihood of hiring *A* players and suggests ways that *B* or *C* players may be moved or coached to the *A* player classification. The causes of *C* player performance include: mis-hired, mis-promoted, or mis-deployed. Solution alternatives for improving performance include redesigning the job so that the jobholder might successfully perform at a higher level.

> Narrow the person's job to include only those responsibilities that the person is competent performing and pay accordingly. People are *C* performers when they are mis-hired, mis-promoted, or mis-deployed within their companies (Smart, 1999, p. 38).

Extra training and coaching is offered as the first option. All employees may theoretically be classified as *A* performers when job redesign is an option.

Preferences

A multi-dimensional work preference research instrument was designed to measure person preferences that affect work or job selection (Gilbert, Sohi, & McEachern, 2008). The study developed a multi-dimensional Work Preference Indicator tool to measure the person-job fit. "The 17 validated constructs were culled from career development-related psychology that has variously been identified with learning styles, work interests, work values, and temperament" (Gilbert et al., 2008, p. 56). Fifteen of the constructs are directly related to preferences regarding tasks within the categories of

Work Interests, *Work Values*, *Personality or Temperament*, and *Learning Style*. Table 3 presents the measure titles and inter-correlations from a sample of 975 subjects.

The *Work Preference Indicator* model includes constructs that were derived from different areas of concentration within the field of career psychology. They recognized that work preferences may be affected by many variables including: education, gender, life and career stages, college major, race, ethnicity, socioeconomic status, and other organizational characteristics (Gilbert et al., 2008). The study was viewed as an initial effort to establish the *Work Performance Indicator* as a valid multidimensional tool to gauge individual job type preferences.

Table 3. Work Preference Indicator Correlation Matrix

#	Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Independence	1													
2	Task Clarity	0.07	1												
3	Team Oriented	0.04	0.19	1											
4	Help Others	0.1	0.2	0.42	1										
5	Likeable	0.05	0.24	0.3	0.44	1									
6	Results Orientation	0.15	0.24	0.24	0.24	0.21	1								
7	Lead Others	0.25	0.03	0.26	0.21	0.14	0.27	1							
8	Written Material	-0.05	0.16	0.15	0.1	0.02	0.14	0.14	1						
9	Aural Learning	0.05	0.2	0.15	0.18	0.25	0.11	0.06	-0.01	1					
10	Mechanical	0.04	-0.02	0.18	0.1	0	0.04	0.14	0.21	-0.014	1				
11	Data	0.06	-0.03	0.07	0.03	-0.05	0.12	0.18	0.24	-0.01	0.27	1			
12	Idea	0.22	0.02	0.18	0.16	0.07	0.22	0.25	0.07	0.11	0.18	0.29	1		
13	Factual Information	0.06	0.39	0.19	0.18	0.17	0.25	0.13	0.26	0.18	0.13	0.22	0.23	1	
14	Time Management	-0.04	0.23	0.2	0.2	0.16	0.24	0.21	0.23	0.09	0.06	0.14	0.1	0.27	1
15	Flexiblity	0.17	-0.07	0.03	0.02	0.03	-0.06	0.09	-0.03	0.09	0.13	0.05	0.09	-0.03	-0.42

Source: (Gilbert et al., 2008)

Task Quotient

The Task Quotient (TQ) is defined as the mix or portions of time spent performing three task types: routine (repetitive), troubleshooting (problem solving) and

project (planning). In theory as the TQ is aligned closer to the individual's preference, their level of satisfaction increases (Gazzara, 2004).

Tasks were defined and managed within four categories titled routine, project, troubleshooting and negotiable. Gazzara's (2003) theory assumes that a worker's internal rhythm attempts to regulate the task types that intrinsically motivate them. The proportions of each task type that creates a natural rhythm yet offers the worker the option to shift among task types and work at each for the preferred amount of time is the most effective for that worker.

The concept of job tasks being split among type categories was developed in the book "Break Through Performance – Managing for Speed and Flexibility" (Daniels, 1995). Daniels (1995) developed definitions for task types. He defined routine tasks as those that can be perfected, standardized, automated, performed just-in-time for speed or batched for efficiency. The output of routine tasks should be controlled so that the customers see them as convenient and reliable.

Project work is designed to accomplish something that is original and always aims at making a change. The processes themselves are as unique as their outputs; however, they can be broken into a series of tasks that produce outputs. Task times may be estimated for future months and by week for the current month to improve accuracy.

Problem solving tasks are less predictable although unpredictable expectations can be set for the response time, solution time, first-pass success ratio and how the results should be accomplished. Data can be collected to improve the duration estimates. A person who prefers problem solving tasks is probably a good troubleshooter. A good troubleshooter is one who is able to analyze and diagnose problems quickly, is creative in

finding immediate solutions, has expertise in the field, has data collection skills, and has the capability to develop long term solutions. Troubleshooting is a professional activity requiring informed judgment, initiative and the ability to tailor responses (Daniels, 1995).

Objective 4b - Task Assignment Tool

The need for a multivariate tool for assessing person-task fit was identified by Gilbert et al. (2008). Methods designed for the periodic assessment of a workgroup's task allocation to optimize person-job fit were not found. The process for allocating tasks is essentially the development of a task list that might be included in an individual position description for each worker. The first identified gap in the literature is the relationship between job customization and improved person-job fit. The second is related to the use of a job aid for measuring the expected task effectiveness of knowledge worker task assignments.

Literature regarding task assignment models may be grouped among the process headings of: project management, work order, work-flow, crew scheduling, concurrent engineering, disability accommodation, computation assignments and mathematical modeling**.** Each of these processes attempt to match people or resources to tasks to meet process objectives. The best assignment is the one that meets process customer requirements most efficiently within constraint boundaries.

The task assignment problem might be considered a knapsack problem given that it is attempting to assign resources in a manner to maximize expected total value. The knapsack problem involves combinatorial optimization (Alberto & Giovanni, 2006). Its

name is associated with a maximization problem for the best choice of essentials that can fit into one bag to be carried on a trip. Given a set of items, each with a cost and a value, the quantity of each item is determined so that the total cost is less than a given limit and the total value is maximized. The problem can be modeled as a muliple generalized assignment problem (Alberto & Giovanni, 2006).

There are a variety of assignment problem models developed in the field of Operations Research. Linear assignment problems (LAP) use linear programming to model task assignment problems. Linear programming is designed to solve transportation problems which minimize the cost to ship goods from multiple sources to multiple locations. The transportation problem is a task assignment problem where the transportation cost is the cost of the task assignment. There are objective functions and constraint equations. Constraints may include the available hours of the assigned person or agent. An optimal solution assignment scenario optimizes the objective function while meeting constraint requirements. The linear programming model assigns a variable to each person and task combination. Binary assignments of 1 for task assignment and 0 for no task assignment are frequently made. Constraint equations are developed to ensure that each task is assigned a client and that no agent is assigned more than a maximum number of tasks. Semi-assignments can split the assignment to multiple agents if their cost coefficients are equal (Kennington & Wang, 1992). The objective function has a cost coefficient assigned to each agent task combination. The optimal solution minimizes the objective function while fulfilling the requirements of the constraints. A Generalized Assignment Problem (GAP) is similar to a LAP except agents are assigned to tasks where both the tasks and agents have size (Anderson, Sweeney, & Williams, 2004).

A greedy solution will make the best task assignment first followed by the next best task assignment. The scenario created depends on the past choices but not on future task assignments. Greedy choices are made iteratively one after another, reducing each given problem into a smaller one. Choices are never reconsidered unlike dynamic programming which makes decisions based on decisions at previous stages and may reconsider those decisions (Gaetan, Pierre, & Brigitte, 1999).

Workflow software routes the next operation of an electronic work order routing to a worker in real time. The software matches the capabilities required by the job with the capabilities of available workers. A supervisor tracks performance with system reporting and intervenes to ensure process goals are met. The software may consider additional factors such as task proficiency and labor cost.

Some models factor in learning curves, worker proficiency in facets of the task, and simulations. Brahms simulation practice for work systems design model incorporates the affect of the communication method used for completing work.

> A Brahms model of work practice reveals *circumstantial, interactional influences* on how work actually gets done, especially how people involve each other in their work. In particular, a model of practice reveals how people accomplish collaboration through multiple and alternative means of communication, such as meetings, computer tools, and written documents. Choices of what and how to communicate are dependent upon *social beliefs and behaviors*— what people know about each other's activities, intentions, and capabilities and their understanding of the norms of the group (Clancey, Sachs, Sierhuis, & Hoof, 1998).

Objective 4 - Literature References

Kristof-Brown and Jansen (2006) defined the need to develop composite measures of person-environment fit with salience-weightings or coefficients indicating

the relative magnitude of each component. Scroggins (2007) demonstrated that the three types of person-job fit (demands-abilities, needs-supplies & self-concept-job) had additive effects on the outcomes of job satisfaction and intent to quit. Hackman & Oldham (1987) developed the job characteristics model to measure the motivational potential of job designs. Model factors included skill variety, task identity, task significance, feedback and autonomy. Morgeson and Humphrey (2006) developed a more comprehensive measure for assessing job design with the Work Design Questionnaire (WDQ). The WDQ job design measures are intended to compare competing job designs. Developing and Validating a Comprehensive Measure for Assessing Job Design and the Nature of Work. Daniels (1995) developed a typology for tasks based on the two dimensions for predictability and delay tolerance. The four types of tasks were labeled routine, troubleshooting, project and negotiable. Negotiable tasks are a combination of troubleshooting and project. Gazzara (2003) studied the relationships between routine, troubleshooting, and project tasks and the mix that would create "flow" in work. Gilbert et al. (2008) developed a multi-dimensional tool to measure person-job fit using career development-related psychology literature. Smart (1999) developed the theory of *topgrading* where an organization frequently employs the top ten percent of the people who would be willing to accept the job for the current pay rate. The theory includes candidate interviewing methods, performance measurement, performance gap identification, and a fixed period for closing gaps by improving performance, changing job design or reassigning jobs.

Body of Knowledge

Engineering Management Body of Knowledge (BOK)

Job design is directly related to three fields of study and related courses within the Engineering Management BOK (Merino, 2007). First, Individual/People oriented behavior with the Organizational Behavior course. Related content includes: 1.A.1.C.2 - *Understanding personality and work performance*, 1.A.1.C.3 - *Work-related attitudes and work performance*, 1.A.1.C.4 - *Cognition and work performance*, and 1.A.1.D.3 - *Job design and enrichment*. Second, Organizational/Group Oriented with the Management Theory course. Third, Functional and Technical Management with the Engineering Management course. Related content include 5.A.1.I.B.3 - *Human Aspects of Organizing – Motivation and Control*, and 5.A.1.II.B - *Achieving effectiveness as an engineer* (Merino, 2007).

SME & AME Lean Body of Knowledge (BOK)

Appendix G contains an outline of the Society of Manufacturing Engineers (SME) & Association for Manufacturing Excellence (AME) Lean Body of Knowledge. The American Society for Quality (ASQ) is developing a lean BOK that includes *Six Sigma* quality methods within the scope.

Human Resources Body of Knowledge (BOK)

The Human Resource Certification Institute (HRCI) developed the Human Resources Managers credentialing program for Professional in Human Resources (PHR)

and Senior Professional in Human Resources (SPHR) (www.hrci.org/Certification/BOK/NBOK, 11/10/07). The latest revision of the Body of Knowledge items related to job design is listed in Appendix J.

CHAPTER III

OBJECTIVES

The four primary objectives of this study were created to further understand the value of customizing a job design to better fit a knowledge worker's knowledge, skills, abilities and characteristics (KSAC). Expected value gains were measured in terms of job satisfaction, task performance, intent to quit, and person-job fit.

Objective 1 – Customized Job Design

The first objective involved the assessment of the expected value of the customization of a knowledge worker's job design and job description to improve job satisfaction, task performance, intent to quit and person-job (P-J) fit. Fit was expected to be improved by closing the gaps between the job specification and the job incumbent's KSAC. The first objective had two parts.

Objective 1a – Customized Job Design and Person-Job Fit

Assess the value of the redesign of a knowledge worker's job to better fit the job incumbent's knowledge, skill, abilities and characteristics (KSAC) in terms of person-job fit. Confirm an expected positive correlation between knowledge worker's self reported degree of job customization and outcomes of self-reported person-job fit as measured by demands-abilities fit, needs-supplies fit and self-concept-job fit.

Objective 1b – Customized Job Design and Outcomes

Assess the value of the redesign of a knowledge worker's job to better fit the job incumbent's knowledge, skill, abilities and characteristics (KSAC) in terms of job outcomes. Confirm an expected positive correlation between a knowledge worker's self reported degree of job customization and outcomes of self-reported job satisfaction and task performance. A negative correlation was expected between job customization and intent to quit.

Objective 2 – Job Descriptions

The second objective assessed the value of job description accuracy and a position description updated to describe a customized job. The second objective had two parts.

Objective 2a – Customize Job Description

Assess the value of a knowledge worker's job description that is updated to reflect a job that was redesigned or customized to better fit the job incumbent KSACs. Confirm expected improved levels of self-reported job satisfaction, task performance and intent to quit for knowledge workers who have both customized jobs and job descriptions updated to reflect the changes when compared to knowledge workers who indicate customized jobs but not updated job descriptions or position descriptions documenting the redesign.

Objective 2b – Accurate Job Description

Assess the value of an accurate job description. Confirm that the degree of job description accuracy will not significantly correlate with outcomes of self-reported person-job fit, job satisfaction, task performance or intent to quit. Job redesign and subsequent job description updates rather than job description accuracy were expected to affect the outcomes.

Objective 3 – Preferred Behavior

The third objective assessed the differences between knowledge workers who have preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Preferred Behaviors were expected to influence levels of perceived person-job fit and the frequency of job customization.

Objective 3a – Preferred Behavior and Person-Job Fit

Assess the differences between knowledge worker self-reported levels of person-job fit for each of four primary preferred behavior types. The four different preferred behavior types are characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Significant differences were expected. The third objective has two parts.

Objective 3b – Preferred Behavior and Job Customization Frequency

Assess the differences between frequencies of job customization for knowledge workers who have primary preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Significant differences were expected.

Objective 4 – Task Assignment Tool

The fourth objective was related to the development of a task assignment tool to guide a manager through an effective knowledge worker task assignment process. A process was be developed for designing a tool to incorporate the person and job characteristics that affect person-job fit in terms of both demands-abilities and needs-supplies.

Objective 4a – Assignment Priority Index

Develop task assignment priority indexes that incorporate person and job characteristics that affect person-job fit in terms of demands-abilities, needs-supplies and self-concept-job fit. Assess the importance of the 24 factors identified in the literature review for predicting task performance. Study the effect of reducing the number of factors on the power to predict person-job fit. Calculate factor coefficients or salience weights for an Assignment Priority Index (API) multi-variant equation that measures expected task performance.

Objective 4b – Task Assignment Tool

Assess the effectiveness and expected value of a task assignment tool (TAT) designed to collect relevant task assignment data and guide decision makers through a person-task assignment process. The tool collects relevant task assignment data from the decision maker and guides them through an effective person-task assignment process.

Assumptions and Limitations

Assumptions

1. A self-reported perception of a knowledge worker's task performance correlates positively with measured task performance.
2. Contextual performance behavior measures will not be negatively impacted by customized job designs and descriptions.
3. A job incumbent's person-job fit gaps should be identified and minimized to improve job performance.

Limitations

The study did not demonstrate cause and effect. Hypotheses tested significant correlations between variables. Pearson product-moment coefficients indicated the strength of the relationships among variables. The outcome variables of job satisfaction, intent to quit, and task performance were measured and a significant difference indicated for p-values $< .05$. However, the primary cause of outcome differences was not expected

to be the level of job customization. There may be missing variables or other variables with high covariance with job customization that partially explain the variance.

The following ten related questions were not addressed in the literature review or research component of this dissertation. Answers to these questions were not within the scope of the study.

1. How might engineering managers best design and use a lean leader's job description to increase job satisfaction, effectiveness and rate of development?

2. How does an engineering manager assess and measure the gap between the *job specification* and the knowledge, skills, abilities and characteristics of the new jobholder?

3. What processes might an engineering manager use to close the gap between position requirements and incumbent capabilities?

4. What are the essential functions of a lean leader job description?

5. What characteristics differ between a successful industrial engineer and a successful lean leader?

6. Is the lean leader job a step on a management career track? If so, what non-essential job functions become essential to prepare for the transition?

7. How might an industrial engineer's job description be customized to effectively perform as a lean leader?

8. What are the benefits of redefining an industrial engineer's job description to the job description with the essential competencies of a lean leader?

9. Does an engineering manager's periodic reallocation of essential job functions to subordinate job descriptions improve productivity?

10. How might a manager perform a work group capacity assessment with job descriptions that indicate both priority and time allocation? Is it a similar process to manufacturing capacity and capability studies?
    i.e.: process = routings; job descriptions = work center; cells = work groups.

A review of existing test instruments that may be used to assess an engineer's aptitude (potential knowledge) and achievement (acquired knowledge) was not performed. The instrument(s) might be used in the customized job description development process.

Delimitations

The research component of this study was limited to lean leaders and youth leaders. It is expected that the results may be generalizable to similar knowledge worker jobs with a large variety of non-routine tasks. It is also expected that the study observations and findings may be generalizable to knowledge worker jobs, with non-routine tasks that consist of multiple work packages that may be modified or reassigned. The methods applied to the task performance prediction model development may be applied to different job and person groups.

CHAPTER IV

METHODOLOGY

Overview

Objectives one through three were tested with six hypotheses. They assessed the effects of job design customization, job description use, job description accuracy, and preferred job incumbent behaviors. The studied population was operationalized as knowledge workers with a variety of non-routine tasks. Lean leader and youth leader sub-populations fit the operationalized definition and were surveyed to obtain adequate sample sizes for statistical analysis, validation, and to more broadly generalize the study results. Respondents reported their perceived measures of person-environment fit and task performance. Respondent perceptions of fit are expected to be better outcome predictors than objective performance measures (Cable & Judge, 1997). The relatively large population of youth leaders was expected to provide a respondent sample size that allowed for the administration of a modified survey to approximately half of the subjects. The modified survey included items designed to validate the job customization measure by assessing its correlation with measures from the Job Diagnostic Survey (Hackman & Oldham, 1980) and the Job Content Questionnaire (Karasek, Brisson, Kawakami et al., 1998). Measures include person-organization fit, co-worker support, decision authority, skill discretion, supervisor support and feedback.

The fourth objective has two parts. First, develop an assignment priority index and test its application within a task assignment tool. Twenty-four task assignment variables, identified in the literature, were measured and correlated with person-job fit and outcome criteria variables. A series of correlation assessments and multiple regression analyses was performed to simplify the model by reducing the number of predictive variables without significantly reducing the variation explained by the model that was measured with R^2 values. The additive effect of each factor was assessed. The regression factor coefficients or salience weights were used to develop assignment priority indexes by task type that predict the level of task performance which may be used to prioritize person-task assignments within a task assignment tool. Second, assess the effectiveness of decision making using the assignment priority index. Knowledge worker supervisor, lean leader, and youth leader participants selected a task of which they were both knowledgeable and which they knew two persons who were capable of performing the task. They assessed the person-task fit combination by a subjective best fit assessment and by entering data on 19 different screens that were programmed using Microsoft Excel Visual Basic. The data entered included their perception of each person-task combination using the assignment priority index factors. The ratings were made on a seven-point scale with the precision recorded in tenths of a unit.

The differences between the rating types were evaluated. The respondents assessed the tool performance by rating: *overall satisfaction with the solution*, *insight provided by the tool*, *willingness to recommend the tool use*, *prediction value* and *pre- and post-satisfaction with solution*. Pre and post solution comparison evaluation was

recommended by Vickery and Narasimhan (1988). The assessments measured the expected task assignment tool effectiveness.

Theoretical/Conceptual Framework

The conceptual job customization model is presented as an influence diagram in Figure 9. Arrows denote an influence. *A* influences *B* means that knowing *A* would directly affect beliefs or expectations about the value of *B*. An influence expresses knowledge about relevance but does not necessarily imply a causal relation. The key drivers of the outcome criteria Y1 (job satisfaction), Y2 (job performance), and Y3 (intent to quit) were X1 (job customization), X2 (preferred behavior type), X3 (person-job fit), and X6 (job description customization).

The secondary driver X5 (job description accuracy) was also evaluated. The remaining five variables in the model: years of experience, years in job, job description accuracy, education and gender were collected to assess their effect on outcome variables and to enable partial correlation to control for their effect during hypotheses testing.

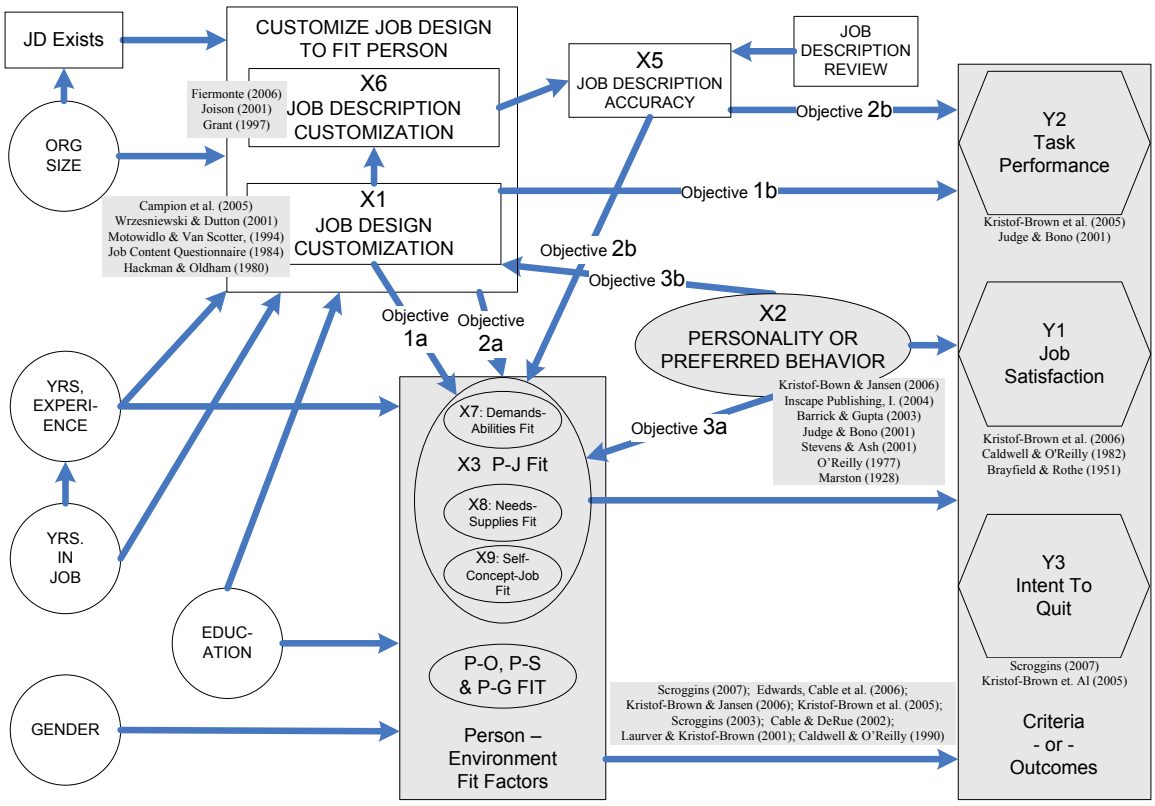


Figure 9. Model: Job Customization Influence Diagram

Objectives and Hypotheses

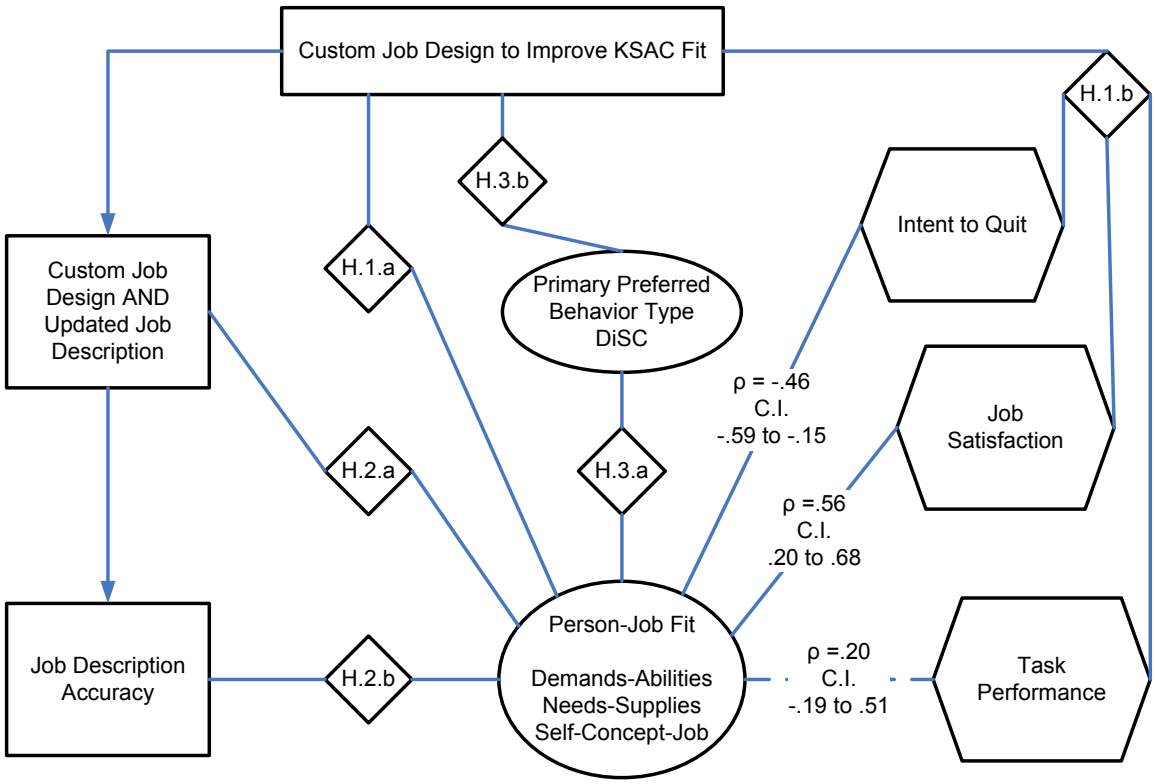
Hypothesis Development

The job description details the roles, responsibilities and tasks that the job-holder is expected to perform. A job specification defines the knowledge, skills, abilities, and characteristics (KSAC) that a job candidate is expected to possess in order to fulfill the job effectively. Given the inherent variability among people and their experiences there will naturally be person-job fit gaps.

The first two objectives and their related hypotheses tested the value of job customization, job description customization, and job description accuracy. The third

tested the effect of preferred behaviors on person-job fit and the frequency of job customization. The fourth developed and tested a task assignment tool designed as a job aid for the person-task assignment process.

The hypotheses relationship diagram in Figure 10 displays relationships between the study hypotheses. The task assignment tool inputs were significant person-task assignment variables and the output was expected task performance.



Source: Correlation coefficients from Kristof-Brown et al. (2005a) Person-Job Fit Meta-Analysis
ρ: estimated true correlation coefficient

Figure 10. Hypotheses Relationships

Table 4 summarizes the tests performed for each hypothesis. Possible conclusions to be drawn from accept or reject decisions are included.

Table 4. Hypotheses Summary

#	Variables	Test Method	Null Hypotheses	Conclusion: Reject	Conclusion: Accept
Obj. 1	**Job design customization correlation with:**				
H.1.a	person-job fit types	Rank Order Correlation	No correlation p <=.05	Leaders with customized jobs report higher levels of person-job fit.	Missing variables expressed in error term, measurement error, small sample size, or job customization is an insignificant factor.
H.1.b	outcome criteria	Rank Order Correlation	No correlation p <=.05	Leaders with customized jobs report improved levels of job satisfaction, task performance or intent-to-quit.	
Obj. 2	**Job description correlation with:**				
H.2.a	person-job fit types	Kruskal-Wallis equal Median Test	Median Difference p <=.05	Leaders with customized jobs and updated job descriptions report higher levels of person-job fit.	Missing variables expressed in error term, measurement error, small sample size, or job description characteristics are insignificant factors.
H.2.b	outcome criteria	Rank Order Correlation	No correlation p <=.05	Leaders with accurate job descriptions report higher levels of person-job fit.	
Obj. 3	**Preferred behavior effect on:**				
H.3.a.	person-job fit types	Kruskal-Wallis equal Median Test	Median Difference p <=.05	At least two primary preferred behavior types report significantly different levels of person-job fit.	Missing variables expressed in error term, measurement error or reported preferred behavior types have insignificant effect on person-job fit.
H.3.b	job design customization	Kruskal-Wallis equal Median Test	Median Difference p <=.05	At least two primary preferred behavior types report significantly different levels of job customization.	Job customization measurement error or negative effects balancing positive effect, small sample size, or primary preferred behavior has an insignificant affect on job customization.
Obj. 4	**Task Assignment Tool (TAT) Value**				
H.4.a	TAT Solution Confidence	1-Sample Sign Test of Median	Median > 4 p <= .05	Significant level of positive confidence with TAT solution.	Non-significant level of positive confidence with TAT solution.
H.4.b	Insight from TAT Application	1-Sample Sign Test of Median	Median > 4 p <= .05	Significant level of positive insight into task assignment decision based on TAT application.	Non-significant level of positive insight into task assignment decision based on TAT application.
H.4.c	TAT as Performance Predictor	1-Sample Sign Test of Median	Median > 4 p <= .05	Significant positive predictive difference between application of TAT and previous method(s).	Non-significant positive predictive difference between application of TAT and previous method(s).
H.4.d	Recommend TAT Application	1-Sample Sign Test of Median	Median > 4 p <= .05	Significant expectation that TAT application will be recommended to other applicators.	Non-significant expectation that TAT application will be recommended to other applicators.
H.4.e	Overall TAT Satisfaction	1-Sample Sign Test of Median	Median > 4 p <= .05	Significant overall positive satisfaction with TAT application.	Non-significant overall positive satisfaction with TAT application.

Objective 1a – Customized Job Design and Person-Job Fit

Assess the value of the redesign of a knowledge worker's job to better fit the job incumbent's knowledge, skill, abilities and characteristics (KSAC) in terms of person-job fit. Job customization is operationalized as the change of task, roles, or responsibility assignments to better fit the job incumbent's knowledge, skills, abilities or characteristics. Confirm an expected positive correlation between knowledge worker self reported degree of job customization and person-job fit. Person-job fit was studied in terms of complementary fit (needs-supplies and demands-abilities) and supplementary fit (self-concept-job).

1a. Null Hypothesis

There will be no significant difference in self-reported person-job fit (demands-abilities fit, needs-supplies fit and self-concept-job fit) between knowledge workers who have customized jobs and those who do not. The null hypothesis was expected to be rejected. The demands-abilities fit was expected to show a more significant correlation than needs-supplies and self-concept-job person-job fit conceptualizations (Kristof-Brown et al., 2005a, p. 288).

Objective 1b – Customized Job Design and Outcome Criteria

Assess the value of the redesign of a knowledge worker's job to better fit the job incumbent's knowledge, skill, abilities and characteristics (KSAC) in terms of job

outcomes. Confirm an expected positive correlation between knowledge worker self reported degree of job customization and outcomes of self-reported job satisfaction and task performance. A negative correlation was expected between job customization and intent to quit.

1b. Null Hypothesis

There will be no significant difference in self-reported job satisfaction, task performance or intent to quit between knowledge workers who have customized jobs and those who do not. The null hypothesis was expected to be rejected. The Kristof-Brown et al. (2005a) meta-analysis showed significant correlations between demands-abilities and needs-supplies fit for both job satisfaction and intent to quit. Significant correlations were not reported for overall performance; however, significant positive correlations with task performance were expected because of this study's importance weighted task based method for measuring task performance.

Measurement

Hypotheses 1a and 1b were tested with data that were collected from the lean leaders and youth leader surveys. Table 5 contains the survey items recorded on a seven-point Likert scale used to evaluate the hypotheses. Perceptions of fit as opposed to actual fit were collected. Cable & Judge (1997) reported that perceptions of fit are better predictors of outcomes.

Table 5. Variables to Test Hypotheses for Objectives 1a and 1b

Objective	Variables	Lean Leader Items Appendix A	Youth Leader Items Appendix B
1a and 1b	Job Customization	1.a, 6.a	1.a, 6.a
1a	Person-Job Fit	2a, c, e, g, i, k, m, n	2a, c, e, g, i, k, m, n
1a	Demands-Abilities Fit	2a, 2g, 2m	2a, 2g, 2m
1a	Needs-Supplies Fit	2c, 2i, 2k	2c, 2i, 2k
1a	Self-Concept-Job	2e, 2n	2e, 2n
1b	Intent to quit	2d, 2k	2d, 2k
1b	Job Satisfaction	2b, 2i	2b, 2i
1b	Task Effectiveness	$\frac{\Sigma \text{ TaskPerformance.i}}{\text{\# tasks evaluated}}$	$\frac{\Sigma \text{ Task Performance.i}}{\text{\# tasks evaluated}}$

Job Customization Measure

A new measure for job customization was developed with two items to allow for reliability measurement. The following two survey items were generated to measure the conceptualization of job customization: *The design of my job (assigned tasks, roles & responsibilities) has been changed to better fit my knowledge, skills, abilities or characteristics* and *Some of my job tasks, roles or responsibilities have been changed to better utilize my knowledge, skills, abilities or characteristics*. A seven-point Likert scale from *strongly disagree* to *strongly agree* was used for increased precision.

Job outcome data were collected using previously validated measures of job satisfaction, task performance, intent to quit, and person-job fit. Known measures of factors that affect the outcomes measures were collected to compare with the new customization measure to confirm criterion validity. The measures and their sources are indicated in the Table 6.

Table 6. Data Collection Sources

Item(s) Source	#Items	Variable Measured
Inscape Publishing (2005)	2	Preferred Behavior, DiSC
Dissertation	2	Job Customization
	8	Demographics
	7	Job Description characteristics & use
Job Content Questionnaire Karasek et al. (1998)	6	Co-worker social support
	3	Decision authority
	7	Skill discretion
	5	Supervisor social support
Job Characteristics Survey Hackman and Oldham, 1980	2	Feedback from agents
	1	Task identity
	2	Task significance
	2	Job satisfaction
Lauver et al. (2001)	2	Intent to quit
Cable & DeRue (2002)	3	Person-Job Fit: Demands-Abilities
	3	Person-Job Fit: Needs-Supplies
	2	Person-Organization Fit
Scroggins (2003)	2	Person-Job Fit: Self-Concept-Job Fit
Gilbert et al. (2008)	15	Person Preferences

Measurement Sources

Additional job, person and task characteristics were collected to enable both hypothesis evaluation and the development of the task assignment tool. Kristof-Brown et al. (2005a) performed a meta-analysis that summarized the person-environment fit literature related to person-job, person-organization, person-group, and person-supervisor fit. Output criteria included job satisfaction, intent to quit, and overall performance. Lauver & Kristof-Brown (2001) performed a person-job fit and person-organization fit study of both hourly and salary workers. Output criteria included job satisfaction, intent to quit, and objective measures of task performance.

The Job Content Questionnaire (Karasek, Brisson, Kawakami et al., 1998) is a questionnaire-based instrument designed to measure the *content* of a respondent's work tasks in a general manner which is applicable to all jobs and jobholders in the U.S. Scroggins (2003) developed a self-concept-job fit measure that is additive with two other measures of person-job fit; demands-abilities and needs-supplies. Scroggins (2007)

confirmed the additive effects of the three types of person-job fit types on job satisfaction and intent to quit. Self-concept-fit accounted for more of the variation in intent to quit and less for job satisfaction when compared to demands-abilities and needs-supplies. See Table 6 for a summary of the data collected and their sources. Hackman and Oldham (1980) developed the Job Characteristics Survey to measure the motivating potential of job designs. The value of the job customization was evaluated by assessing the degree of positive correlation between the new measure of job customization and the outcome measures of job satisfaction, task performance and intent to quit.

Test Statistics

Pearson's product-moment correlation coefficients were used to assess the correlations between the degree of job customization and dependent variables including: person-job fit, job satisfaction, task-performance, and intent to quit. The model's independent variables included: preferred behavior, task preferences, demographics, person-organization fit, and other dependent variables. The β coefficient for each correlation indicated the strength of the relationship. Correlation was tested by developing confidence intervals for βs. The variable correlation analysis methodology was similar to that performed by Lauver and Kristof-Brown (2001).

Face Validity

The data collection content, clarity and ease-of-use were assessed by lean leader professionals, youth leader professionals and Western Michigan University graduate students.

Convergent Validity

Lean leader and youth leader results were compared and contrasted. Similar results were expected based on similar job characteristics. A second version of the youth leader survey measured job characteristic motivational potential using variables included in Hackman and Oldham's (1980) Job Characteristics Model. The theory assumes that the motivational potential is moderated by the degree that the person has the knowledge, skills, and abilities to perform the job. Job customization ratings were expected to positively correlate with job characteristics. See Figure 11 for an overview of job characteristics theory relationships.

Job Characteristics	Psychological states	Personal & Work Outcomes
Skill variety	Meaningfulness	High motivation
Task identity		High quality work
Task significance		High satisfaction with work
Autonomy	Responsibility for outcomes	Low turnover/absenteeism
Feedback	Knowledge of results	
Motivating potential is moderated by the levels of growth need, knowledge, skills abilities, and contextual satisfaction.		

Source: (Hackman & Oldham, 1980)

Figure 11. Job Characteristics Model

Divergent Validity

The second version of the youth leader survey measured additional person-environment and job characteristics that have motivating potential but should not be significantly correlated with job customization. Table 2 summarizes the survey item content. The comparisons demonstrated that job customization is different from other variables that are also known to affect the outcome criteria. Items from the Job Characteristics Questionnaire (Karasek, Brisson, Houtman, Bongers, & Amick, 1998)

were included to measure: co-worker social support, supervisor social support, and feedback from agents.

Criterion Validity

Regression analysis was performed to assess the correlations among job customization, job satisfaction, task performance, intent to quit, and P-J fit. No job customization questions comparing the fit of the job characteristics with job holder KSACs were identified in the literature. There is no claim that the job customization measures or questions are better than an existing unknown set of questions.

Construct Validity

A second version of the youth leader survey collected data to compare and correlate the job customization measures with two other job design models in order to measure the relative importance of job customization variables with other factors known to affect job satisfaction and intent to quit. The validation survey content is summarized in Table 7.

Reliability

Alternate-form reliability was assessed by presenting two or more items for person-job fit types and output criteria. Internal consistency among items measuring the same construct was assessed using Cronbach's alpha reliability test. All survey item sources were selected from published journal studies that demonstrated Cronbach's correlation alpha values greater than 0.70 which demonstrated internal consistency

among items that measured the construct. Alpha values greater than 0.70 are generally considered acceptable (Nunnally, 1983). Electronic surveys presented the survey items with common format and scales to reduce measurement error.

Table 7. Job Customization Measure Validation Survey Content

Item Source	#Items	Variable Measured
Dissertation	2	Job Customization
Job Content Questionnaire Karasek et al. (1998)	6	Co-worker social support
	3	Decision authority
	7	Skill discretion
	5	Supervisor social support
Job Characteristics Survey Hackman and Oldham (1980)	2	Feedback from agents
	1	Task identity
	2	Task significance
	2	Job satisfaction
Lauver et al. (2001)	2	Intent to quit
Cable and DeRue (2002)	3	Person-Job Fit: Demands-Abilities
	3	Person-Job Fit: Needs-Supplies
	2	Person-Organization Fit
Scroggins (2003)	2	Person-Job Fit: Self-Concept-Job Fit

Objective 2a – Customized Job Description

Assess the value of a knowledge worker's job description that is updated to reflect a job that was redesigned or customized to better fit the job incumbent KSAC. Confirm expected improved levels of self-reported job satisfaction, task performance and intent to quit for knowledge workers who have both customized jobs and job descriptions updated to reflect the changes when compared to knowledge workers who indicate customized jobs but not updated job descriptions documenting the redesign.

2a. Null Hypothesis

There will be no significant difference in self-reported person-job fit for knowledge workers with customized jobs who have customized job descriptions and those who do not have customized job descriptions. The null hypothesis was expected to be rejected. Grant (1997) makes the point that job descriptions should clearly state what the organization wants the employee to do for them to be useful to the job incumbent and the organization.

Objective 2b – Accurate Job Description

Assess the value of an accurate job description. Confirm that the degree of job description accuracy will not significantly correlate with outcomes of self-reported job satisfaction, task performance or intent to quit. Job redesign and subsequent job description updates rather than job description accuracy were expected to affect the outcomes.

2b. Null Hypothesis

There will be no significant difference in self-reported person-job fit, job satisfaction, task effectiveness or intent to quit between knowledge workers who have accurate job descriptions and those who do not. The null hypothesis was expected to be not rejected. Grant (1997) studied 200 non-managers and 85 percent said that their job descriptions were deficient and 70 percent had key elements omitted. It was expected

that the infrequent use of job descriptions and their incompleteness will mask the minor effect that accurate job descriptions may have on these outcome criteria.

Measurement

The hypothesis was tested with data that were collected from the youth leader and lean leader surveys. The self-scored survey items presented in Table 8 were used to evaluate the hypothesis. Intent to quit, job satisfaction, person-job fit and task effectiveness were recorded on seven-point Likert scales. The person-job fit measure was measured in terms of demands-abilities fit, needs-supplies fit and self-concept fit. The aggregate person-job fit measure was a non-weighted average of the three person-job fit types.

Table 8. Variables to Test Hypotheses for Objectives 2a and 2b

Objective	Variables	Lean Leader Items Appendix A	Youth Leader Items Appendix B
2a	Job Customization	1a, 6a	1a, 6a
2a and 2b	Person-Job Fit	2a, c, e, g, i, k, m, n	2a, c, e, g, I, k, m, n
2a	Demands-Abilities Fit	2a, 2g, 2m	2a, 2g, 2m
2a	Needs-Supplies Fit	2c, 2i, 2k	2c, 2i, 2k
2a	Self-Concept-Job	2e, 2n	2e, 2n
2a	Customized Job Description Update	6c	6c
2b	Job Description Accuracy	1i	1i
2b	Intent to quit	2d, 2k	2d, 2k
2b	Job Satisfaction	2b, 2i	2b, 2i
2.b	Task Effectiveness	$\frac{\Sigma \text{ Importance}_i * \text{Perf}_i}{3 \text{ tasks}}$	$\frac{\Sigma \text{ Importance}_i * \text{Perf}_i}{3 \text{ tasks}}$

Job Description updates and accuracy were recorded as a binary yes or no response. Multiple regression was used to test correlation significance. Significant differences were indicated for p-values less than .05. Additional job description use data

was collected and includes: performance gap identification (Y/N), task prioritization (Y/N), task time estimates (Y/N), and supervisor review meetings (Y/N).

Test Statistics

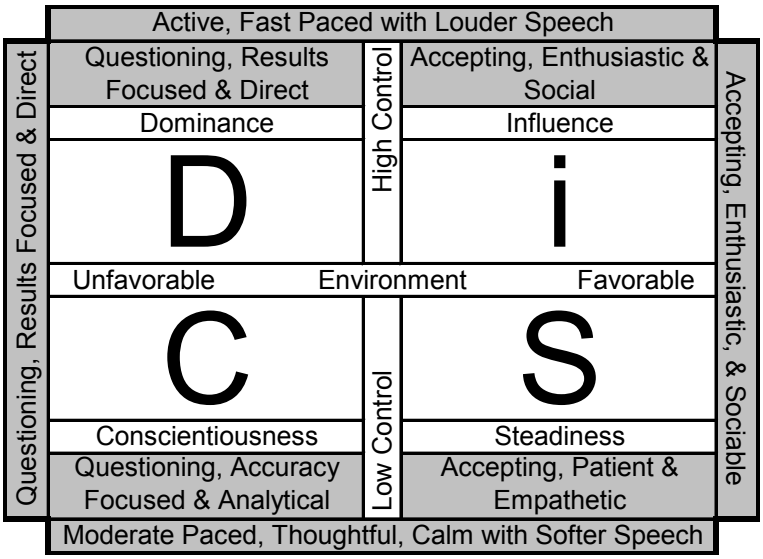
The non-parametric Kruskal-Wallis median difference test was used to evaluate the hypothesis 2a. Least square regression and non-parametric rank order regression were applied to evaluate hypothesis 2b.

Validity

Common questions from the youth leader survey were asked to provide comparison data. The data were used to generalize the findings from the youth leader survey regarding the effect of job description customization and accuracy on job satisfaction, job-fit and task performance.

Objective 3a - Preferred Behavior and Person-Job Fit

Assess the differences between knowledge worker self-reported levels of person-job fit for each of four primary preferred behavior types. The four different preferred behavior types are characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Assess the difference in terms of self-reported levels of person-job fit and frequencies of job customization. Figure 12 further details the preferred behavior type differences.



Source: Adapted from Inscape Publishing, Inc. (2004)

Figure 12. DiSC Preferred Behavior Classifications

3a. Null Hypothesis

There will be no significant difference in self-reported person-job fit for knowledge workers who have different primary preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Self-reported behavior types were expected to have a significant effect on person-job fit. The null hypothesis was expected to be rejected. Kristof-Brown and Jansen (2006) proposed first that individuals high on conscientiousness will place greater emphasis on task-related than interpersonal forms of fit. Second, individuals high on agreeableness (Influence and Steadiness) will place greater emphasis on interpersonal forms of fit rather than task-related forms of fit.

Objective 3b - Preferred Behavior and Job Customization

Assess differences between frequencies of job customization for knowledge workers who have primary preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Respondents indicating primary preferred behaviors of dominance or influence were expected to more frequently have customized jobs.

3b. Null Hypothesis

There will be no significant difference in the frequency of job customization for knowledge workers who have primary preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Customization is expected to be driven by knowledge, skills, and abilities rather than preferred behavior which may be categorized within the person-job fit needs-supplies category. The null hypothesis was expected to be rejected. Job incumbents with primary preferred behaviors characterized as either *Dominance* or *Influence* are expected to more frequently have customized job given that they feel that they have more control over their environment (Inscape Publishing, 2004).

Measurement

The hypothesis was tested with data that were collected from the Youth Leader and Lean Leader surveys. Survey items collected are listed in Table 9.

Table 9. Variables to Test Hypotheses for Objectives 3a and 3b

Objective	Variables	Lean Leader Items Appendix A	Youth Leader Items Appendix B
3a	Person-Job Fit	2a, c, e, g, i, k, m, n	2a, c, e, g, i, k, m, n
3a, 3b	Preferred Behavior	7a, 7b, 7c	7a, 7b, 7c
3b	Job Customization	1a, 6a	1a, 6a

Test Statistics

Multiple regression was performed to test 3.a. Statistical differences for 3.b were tested using the Kruskal-Wallis Test for non-parametric data to compare more than two groups. The Mann-Whitney test was used to compare two independent groups. Significant differences were indicated for p-values less than 0.05.

Objective 4a – Assignment Priority Index

Develop a task assignment priority index that incorporates person and job characteristics that affect person-job fit in terms of demands-abilities, needs-supplies and self-concept-job fit. Incorporate person and task characteristics or factors that affect task performance. There were two parts to this objective. First, develop Assignment Priority Indexes (API) to guide knowledge worker managers through the person and task assignment process. Multiple regression correlation coefficients between each of the 24 person or task factors were used to develop the API. The API equation can be found in Equation #1 and the 24 factors are summarized in Table 5. The additive effect of each factor was measured through a multiple regression method.

Equation 1. Assignment Priority Index

$$
\begin{aligned}
API = {} & (C1*KN_p + C2*SK_p + C3*AB_p + C4*TR_p) && \text{Demands-Abilities Fit} \\
& + (C5*PB_{pt} + C6*TQ_{pt} + C(7\text{-}21)*PR_{ipt}) && \text{Needs-Supplies Fit} \\
& + (C22*CP_p + C23*GR_{pt}) && \text{Self-Concept-Job Fit} \\
& + (C24*PE_p + C25*PR_p) && \text{Performance Assessment}
\end{aligned}
$$

Subscripts: p-person rating, t-task rating, i-15 different preference types

The significant factors and their multiple regression coefficients were used to develop the assignment priority indexes that measured the expected impact of the task assignment on task performance. The significant variables were identified using a three-step reduction process using both correlation and multiple regression analyses. The index was designed to aid the decision maker with the prioritization of person-task assignments within a task assignment tool. Multiple assignment priority indexes were developed for each of the following three task types: routine, problem solving, and project.

Principal component analysis was applied to understand underlying factors that may have existed among the predictive variables. Six principal components with Eigen values greater than one were identified. The six principal components included 22 of the 24 independent task performance predictor variables. Similar factors were grouped; however, the principal components were not better predictors of task performance than the individual variables. The analysis is presented in Appendix Y.

An Analytic Hierarchy Process (AHP) model was also developed in Excel using Visual Basic based on a model developed by Albright (2001). The AHP model is an alternate method for person-task assignment decision making. The model compares each person's expected person-task fit based on the applicators estimate of both the value and

importance of each factor. This process of making the pair-wise comparisons is both lengthy and does not offer an objective reference point for comparing expected task performance. The AHP process may be a supplemental method included with a future task assignment tool as an alternative that does not use predefined independent predictor variables or factor weightings.

Assignment Priority Index

A multivariate index was designed to develop a task Assignment Priority Index (API) to predict expected task performance to be used for prioritizing task assignment decisions. The multivariate measurement will enable the manager's intuitive comparison of the effect of the β coefficient size on the resulting task API.

Higher order equations may enable the modeling of interactions between variables but they would mask the impact of coefficient changes. The equation would be difficult to generate, difficult to validate and would differ by job type and organization which would limit tool application. Scroggins (2007) confirmed that measures of person-job fit have an additive predictive effect on both job satisfaction and person-job fit. Kristof-Brown et al. (2006) proposed the development of a first order additive algorithm with salience weighting to measure person-environment fit.

Twenty-four factors were evaluated for inclusion in the Assignment Priority Index (API). The values assigned to each factor ranged from 1 to 7. Table 10 contains factor labels, person-job fit types, variable names and value labels. All assigned values ranged from 0 to 1. A base set of API coefficients or salience weightings were developed from the multi-regression analysis using the job and task assessment survey data.

The factors were categorized as either demands-abilities fit, needs-supplies fit, self-concept-job-fit and performance assessment. Descriptions of the variables evaluated for inclusion in the task priority assignment multivariate measurement follow.

Table 10. Assignment Priority Index Multivariate Factors and Coefficients

Person-Job Fit Type	Name - Fit Variable	Vari-able	Levels	Coeffi-cient #
Demands - Abilities	Knowledge	KN_p	1 to 7	C_1
	Skills	SK_p	1 to 7	C_2
	Ability	AB_p	1 to 7	C_3
	Training	TR_p	1 to 7	C_4
Needs-Supplies	Preferred Behavior Match	PB_{pt}	1 = Y, 0 = N	C_5
	Actual % / Desired %	TQ_{pt}	#: >1, =1, <1	C_6
Needs-Supplies Work Interests	Mechanical	ME_{pt}	1 to 7	C_7
	Data	DA_{pt}	1 to 7	C_8
	Factual Information	FIpt	1 to 7	C_9
	Take Charge	TC_{pt}	1 to 7	C_{10}
	Help Others	HO_{pt}	1 to 7	C_{11}
Needs – Supplies Work Values	Independence	IN_{pt}	1 to 7	C_{12}
	Likeable	LI_{pt}	1 to 7	C_{13}
	Positive Value	PV_{pt}	1 to 7	C_{14}
	Team Oriented	TO_{pt}	1 to 7	C_{15}
Needs – Supplies Personality or Temperament	Clarity	CL_{pt}	1 to 7	C_{16}
	Ideas	ID_{pt}	1 to 7	C_{17}
	Plan Ahead	PL_{pt}	1 to 7	C_{18}
	Flexibility	FL_{pt}	1 to 7	C_{19}
Needs – Supplies Learning Style	Aural	AU_{pt}	1 to 7	C_{20}
	Written Material	WM_{pt}	1 to 7	C_{21}
Self - Concept- Job	Career Plan Fit	CP_p	1 to 7	C_{22}
	Job Grade / Task Grade	GR_{pt}	1 to 7	C_{23}
Performance	Performance	PE_p	1 to 7	C_{24}
	Promotability	PR_p	3, 2, 1	C_{25}

Sources: (Gazzara, D.M., 2003; Gilbert et al., 2008; Inscape Publishing, 2004; Smart, 1999)
Subscripts: p-person rating, t-task rating, i-15 different preference types)

Demands-Abilities Fit

The worker fills gaps or needs in the workplace. The following variables are associated with what the worker supplies to the workplace.

AB - Abilities Fit. Assessment of the worker's abilities to perform the proposed task assignment and transferable abilities that may help compensate for gaps.

KN - Knowledge Fit. Assessment of the worker's knowledge regarding the proposed task assignment and transferable knowledge that may help compensate for knowledge gaps.

SK - Skills Fit. Assessment of the worker's skills regarding the proposed task assignment and transferable skills that may help compensate for gaps.

TR - Training Status. The assessment of the worker's previous level of task training that may consider transferable or compensating skills that are expected to increase the probability of a good person task match.

Needs-Supplies Fit

The job incumbent's needs are met by similar characteristics within the workplace environment. The following variables are associated with the worker needs that are supplied by the workplace.

PB - Dominant Preferred Behavior or *DiSC* Match. Each worker is assigned a primary preferred behavior type based either on worker or manager assessment. Each task is also assessed by the manager to determine if there is a primary preferred behavior that would be a best fit for the job. The preferred behavior type if identified is entered as

a parameter for the assigned task. A match of preferred behavior type between the worker and the task is assigned a value of 1 and no match is assigned a PB_{disc} value of 0. Scales other than the *DiSC* may be substituted by the manager.

PR - Preference Fit. Preferences are what a person wants from their work and what they want the work setting to be like. Fifteen preference items were assessed for model inclusion. Table 11 defines the fifteen constructs for task preference.

TQ - Task Quotient. The task quotient is the split of assigned tasks among the categories of routine, problem solving, or planning. There is a mix that each worker is desirous of maintaining to sustain a work rhythm and variety to stay motivated. A person is more likely to be assigned to a task type where he or she has currently under assigned as compared to the ideal task quotient (Gazzara, 2004).

Self-Concept-Job Fit

This person-job fit type measures the degree of fit between the task and the individual's self-concept. If there is a good fit then the individual will experience work as meaningful. The following two factors might be considered components. Multiple regression results indicated the strength of the relationships.

CP – Career Plan Fit. Assessment of the task fit with the candidate's career plan.

GR – Grade Match. Assessment of the fit between the candidate's job grade and the lowest level of job grade expected to be able to perform the task.

Table 11. Task Preference Constructs and Definitions

Area	Construct	Description
Work Interests	Data (Numbers)	Task requires working with numbers, analyzing numbers, and keeping data records.
	Factual Info. (Study)	Task requires studying information, retaining it and using it.
	Help Others	Tasks allows performer to care for, coach, or help others.
	Take Charge (Lead Others)	Task requires taking responsibility for other's work and taking charge
	Mechanical (Things)	Task requires working with, studying about, building, or repairing THINGS.
Work Values	Independence	Task requires working independently and making own decisions.
	Likeable (Get Along)	Task allows worker to be well liked and get along with others.
	Positive Value (Results)	Task results are known and the positive value to the organization is understood.
	Team Oriented	Task requires working with others. Requires being an effective and integral part of the team. Successes will be shared with others.
Personality or Temperament	Clarity (Guide)	Guidance is given to clarify task expectations. Task has helpful training and specific instructions.
	Flexibility (Freedom)	Task allows personal freedom to choose when and how to perform the task.
	Idea	Task requires thinking in terms of ideas and possibilities. May work with concepts or theories. May generate ideas through creative thinking and research.
	Plan Ahead (Time Mgt.)	Task requires organization with daily events planned ahead.
Learning Style	Aural Learning (Talk)	Task requires learning through open conversation and explanations.
	Written Material (Read)	Task requires reading from written materials, computers or other visual sources of information.

Source: (Gilbert et al., 2008, pp. 61-62)

Performance Assessment

These variables were added to the Assignment Priority Index to account for high performance in current task assignments and for the potential to accept greater value-added assignments in the future.

PR – Promotability. Each worker is assessed with regard to their promotability. The concept recognizes that workers with high promotability are expected to be assigned increasingly difficult tasks with accompanying higher risks and rewards. The following definitions for promotability were defined by Smart (1999, p. 18). *Promotable to organization's top level jobs* = 3, *Promotable to next one or two more demanding level of jobs* = 2, or *Current job level demands* = 1.

PE - Overall Task Performance. Task performance was measured subjectively for up to three tasks by each survey responder. The mean of each subject's individual task assessment ratings was used to measure overall task performance. An overall assessment of job performance was not measured.

Objective 4b – Task Assignment Tool

Assess the effectiveness and expected value of a task assignment tool (TAT) designed to collect relevant task assignment data and guide decision makers through a person-task assignment process. The TAT was designed and tested to illustrate how it might enable a management process to develop a work group task assignment scenario

that better fits each knowledge worker's KSAC and task demands. The tool incorporates person and job characteristics affecting person-job fit in terms of demands-abilities, needs-supplies and self-concept-job fit.

Task Assignment Tool Test Hypotheses

There were five hypotheses designed to test the value of the task assignment tool. Solution confidence, insight from application, predictor of task performance, likelihood or recommending application, and overall satisfaction were assessed by tool applicators.

4a. Null Hypothesis

Solution Confidence: There will be a non-significant level of positive confidence in the TAT solution. TAT reviewers assessed the following question on a seven-point scale ranging from strongly disagree to strongly agree: *I feel more CONFIDENT with the Task Assignment Tool predicted task performance RATINGS than my initial task performance ratings.*

4b. Null Hypothesis

Insight from Application: There will be a non-significant level of positive insight in the task assignment decision based on TAT application. TAT reviewers assessed the following question on a seven-point scale ranging from strongly disagree to strongly agree: *The Task Assignment Tool provided helpful INSIGHT regarding the task assignment decision.*

4c. Null Hypothesis

Predictor of Task Performance: There will be a non-significant positive predictive difference between application of TAT and previous method(s). TAT reviewers assessed the following question on a seven-point scale ranging from strongly disagree to strongly agree: *The Task Assignment Tool is a better PREDICTOR of task performance than methods I normally use.*

4d. Null Hypothesis

Likelihood of Recommending Application: There will be a non-significant expectation that TAT application will be recommended to other applicators. TAT reviewers assessed the following question on a seven-point scale ranging from strongly disagree to strongly agree: *I would RECOMMEND using a knowledge worker task assignment tool as a decision making job aid if a similar tool was adopted by my organization.*

4e. Null Hypothesis

Overall Satisfaction: There will be a non-significant overall positive satisfaction with TAT application. It was expected that satisfaction with the insight provided by the assessment and indexes would be moderated by the time and evaluation work needed to enter the assignment tool inputs. TAT reviewers assessed the following question on a seven-point scale ranging from strongly disagree to strongly agree: *Considering all aspects of this Task Assignment Tool, my overall SATISFACTION is ...*

Measurement

The hypotheses were tested with data that were collected from knowledge worker supervisors, lean leaders, youth leaders, knowledge worker supervisors, and people who reported the responsibility for assigning tasks to knowledge workers. See Appendix U for a copy of the survey.

Participants were asked to test the task assignment tool by first selecting a task for which they knew of two persons capable of performing the task. A Microsoft Excel spreadsheet was generated with Visual Basic code presenting 19 forms for data entry, defining the task assignment problem and assessing the person-task fit combinations. They were asked to compare their initial person-task performance rating with the rating predicted by the task assignment tool measures (Vickery & Narasimhan, 1988). They also assessed the task assignment tool for the insight into the task assignment decision, overall satisfaction with the tool, and willingness to recommend the tool to others. The hypotheses were evaluated with the non-parametric *1-sample sign test of the median* to test the probability that the actual median was greater than the average rating of four.

Job Customization Process Flow

A process for initiating job customization for knowledge workers was developed based in part on the literature review and is graphically presented in Figure 13. The model was developed to integrate job customization into a management model. The model integrates Job Analysis, Topgrading (Smart, 1999), Situational Leadership - Partnering for Performance (Blanchard, 2001) and Job Customization through job design and task assignment.

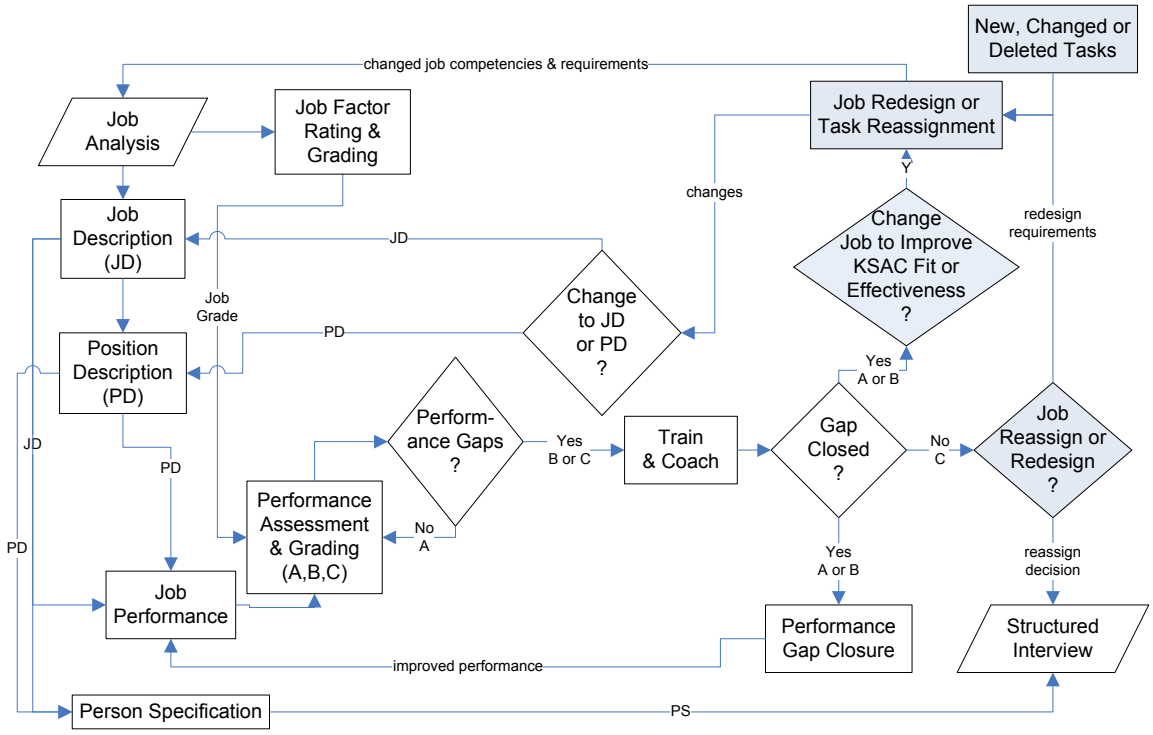


Figure 13. Job Customization Process Flow

The job customization process flow begins a job analysis activity that produces job descriptions that are further defined as position descriptions that is specific for each jobholder. A person specification is developed from the job or position descriptions and is used to guide the selection process. High performing candidates are identified by documenting the person specification and performing a structured interview process. Candidate and job incumbent performance is assessed and the worker's overall performance is graded at an *A*, *B*, or *C* level. Job incumbents graded as *B* or *C* receive further training, coaching and reassessment. Coaching and training methods follow a Situational Leadership model (Hersey & Blanchard, 1993). Job incumbents who remain at a *C* level following coaching are either reallocated or their job is redesigned so they can perform at the *B* level with the capability to perform at an *A* level. Job incumbents who have improved performance to the *A* or *B* level may also participate in job redesign

to optimize personal or group performance or to better match their job with their KSACs. Redesigned jobs are documented in updated job and/or position descriptions. The jobs are re-graded if the work content is significantly changed. Subsequent performance evaluations are based on the new job grades and job or position descriptions.

The task assignment tool was designed to guide the knowledge worker task assignment team through the task assignment process. A task assignment process flow that incorporates the tool is present in Figure 14. The task assignment tool feedback confirmed the expected tool value as a task assignment job aid.

Task Assignment Decision Making

An assignment heuristic model using the assignment priority index for decision making is favored over a linear programming model for the following reasons. First, the proposed task assignment heuristic and process is expected to have acceptable face validity. Second, it is unreasonable to assume that all of the significant decision variables that affect the task assignment decisions might be identified, quantified and included in the model. Third, the assignment model must be intuitively easy to understand for the user to adapt to their unique work group and organization. Fourth, the time and effort to complete the reassignment process will need to be deemed efficient for the model to be accepted and used.

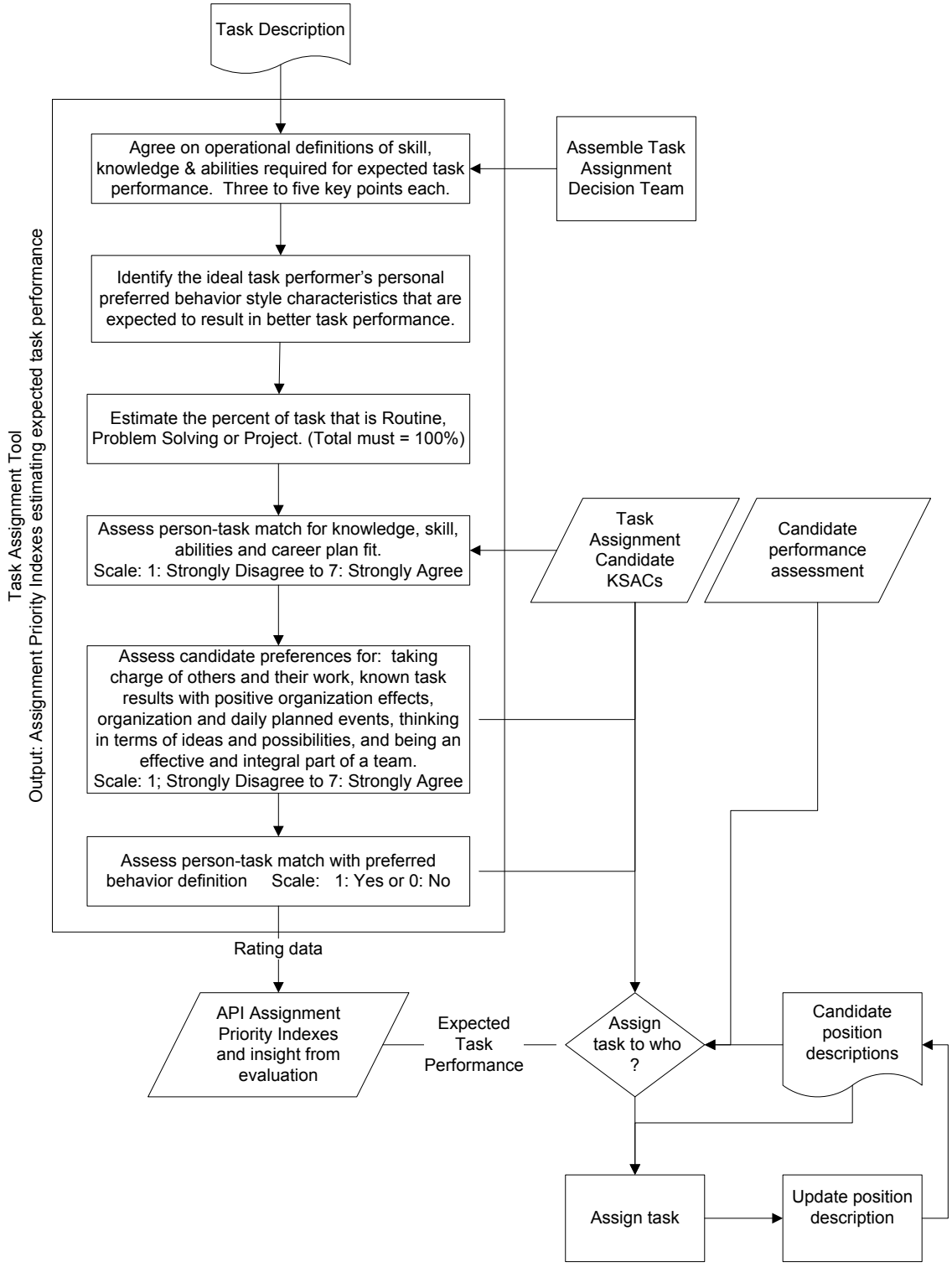


Figure 14. Task Assignment Process Aided with the Task Assignment Tool

Workgroup Task Assignment Tool Spreadsheet Application

A draft workgroup task assignment spreadsheet model was created in Microsoft Excel that incorporated 25 predictive factors. The worksheet was designed to collect the input data for each person in a work group. The data are combined into a second worksheet for the work group. One worksheet is used to assign tasks using a prioritization method that uses calculated task Assignment Priority Indexes. There are eight additional worksheets with matrices that record task and worker dependent variable assignments. Five of the worksheets have data entered by the manager and three are calculated by the spreadsheet. The complexity of a work group tool may be significantly reduced by eliminating less salient factors as performed for objective four. The work group task assignment worksheet example is included as Appendix L.

Task Assignment Process

The task assignment tool is expected to be applied to a job design and management process. Appendix O contains the steps that might be included in a process designed to periodically reassess person-task assignments.

Data Collection Design

The data collected were from a descriptive or observational design collecting information that already exists as opposed to an experimental design. The design was cross-sectional given that it provides descriptive data at one fixed point in time (Fink, 2003).

The data collected are both qualitative and quantitative. "Qualitative surveys collect information on the meanings that people attach to their experiences and the ways they express themselves. Quantitative or statistical surveys provide information answering questions like count, average, and comparisons" (Fink, 2003, p. 61). Qualitative surveys often explore knowledge, feelings, opinions, and values. They may be designed to collect information from a small number of people, people who are unlikely to participate in a traditional survey, to learn about people in their natural environment, to supplement traditional surveys, or to collect data when traditional research methods are ineffective. The data may come from text, observation, interviews, survey or focus groups and content analysis may be either inductive or deductive. An inductive analysis reviews the data for common themes while the themes are pre-selected in deductive analysis (Fink, 2003). Both deductive and inductive analyses were part of this study's data analysis.

Pilot Study

Pilot studies were performed to validate the survey tool data collection effectiveness. The survey methodology for collecting data effectiveness was confirmed with a pilot study survey sent to lean leaders, youth leaders and Western Michigan University graduate students. Additional pilot survey items assessed the survey purpose and question clarity as part of the survey validity assessment.

The electronic lean leader survey web-link was sent to each potential participant's e-mail address. The introductory e-mail containing the web-link is included as Appendix

K. The following question was asked after the survey questions to receive recommended improvements. *Please add comments regarding suggested changes to improve question clarity*.

Scales

Seven-point Likert style scales were used for items requiring perceived measures on an ordinal scale. Lauver & Kristof-Brown (2002) used a 7-point Likert scale ranging from strongly disagree to strongly agree to measure person-job fit survey items. Task performance was measured for each of three tasks using a 7-point scale.

Research Type

The study is a mixed model of quantitative and qualitative research. It is qualitative in that it collects descriptive information. *Ex post facto* research studies relationships that can be determined but without experimental control using events that have already occurred. This type of study is similar to a *quasi-experiment* as defined by Cook and Campbell (1979); however, factors are not being manipulated so they would define this study as a *passive-observational study*.

> Quasi-experiment … comparisons depend on nonequivalent groups that differ from each other in many ways other than the presence of a treatment whose effects are being tested. The task confronting persons who try to interpret the results from quasi-experiments is basically one of separating the effects of a treatment from those due to the initial non-comparability between the average units in each treatment group; only the effects of the treatment are of research interest (Cook & Campbell, 1979, p. 6).

Cook and Campbell referred to this type of study in literature as either a *correlational method* or *non-experimental method* for inferring cause from passive observation. They created the new term, *passive-observational study*, to better describe this type of research.

> The methods … try to infer causal processes based on observations of concomitances as they occur in natural settings, without the advantage of deliberate manipulation and controls to rule out extraneous causal influences (Cook & Campbell, 1979, p. 295).

Variables in this study with known effects on the dependent variables were collected to control their effects or to reduce unexplained variation. Statistical assessments of covariance between variables tested in each hypothesis were conducted. Causal modeling by path analysis was not conducted. See Figure 9 on page 82 for the study model path diagram.

> Cook and Campbell warned researchers that most path modeling causation conclusions are suspect when the researcher is not able to manipulate the cause. They also warned against attempts to validate a causal path because they require reductions in complexity and the elimination of possible causal connections (Cook & Campbell, 1979, p. 308).

The members of the two professional organizations were the target audience representing a larger group of members and non-members. The selection of the respondents was biased toward those who both read the organization newsletters and were willing and able to complete the survey via the web-link.

Variables - Ordinal

1) Job Customization: The following two items measured job customization on a 7-point Likert scale: *The design of my job (assigned tasks, roles & responsibilities) has been changed to better fit my knowledge, skills, abilities or characteristics*, and *Some of my job tasks, roles or responsibilities have been changed to better utilize my knowledge, skills, abilities or characteristics*.

2) Job Satisfaction: The following two measures were included to measure job satisfaction and its associated reliability: *Considering all aspects of my job, my overall level of job satisfaction is…* (Castillo & Cano, 2004, p. 68) and Job Characteristics Survey item 3.6: *I feel a great sense of personal satisfaction when I do this job well* (Hackman & Oldham, 1980).

3) Task Effectiveness: Mean of perceived task performance for one to three tasks. A measure weighted by individual task importance was compared with the mean of each subject's task assessments. The task performance mean correlations were stronger with lower p-values.

4) Person -Job Fit: Person-job fit questions were measured with eight questions scored on a seven-point Likert scale in order to assess correlations and check measurement reliability. Person-job fit was measured in terms of demands-abilities fit, needs-supplies fit and self-concept-job fit. Perceptions of fit as opposed to actual fit were collected. The perception of fit better predicts outcomes (Cable & Judge, 1997).

Cable and DeRue (2002) expanded the definition of person-job fit to include both demands-abilities (congruence between an employee's skills and the job) and needs-supplies (congruence between the needs of the employee and the rewards they receive from their service on the job).

a) The following three items measured demands-abilities fit: *The match is very good between the demands of my job and my personal skills*, *My abilities and training are a good fit with the requirements of my job*, and *My personal abilities and education provide a good match with the demands that my job places on me*. Cable and DeRue (2002, p. 879) measured a reliability $\alpha = .84$ for a multiple-firm sample.

b) The following three items measured needs-supplies fit: *There is a good fit between what my job offers me and what I am looking for in a job*. *The attributes that I look for in a job are fulfilled very well by my present job*, and *The job that I currently hold gives me just about everything that I want from a job*. Cable and DeRue (2002, p. 879) measured a reliability $\alpha = .93$ for a multiple-firm sample.

c) The following two items measured self-concept-job fit: *The performance of my job tasks makes me realize that I have several good qualities*, and *the performance of my job tasks makes me feel good about the person that I am*. Scroggins (2007, p. 1655) measured coefficient alpha at 0.76 for a three-item group of questions that contained these questions.

5) Intent to quit: The following three items scored on a 7-point Likert scale were adapted from four O'Reilly items (O'Reilly, Chatman, & Caldwell, 1991) by Lauver & Kristof-Brown (2001) to measure intent to quit: *I would prefer another job to the one I have now*. *If I have my way, I won't be working for this company a year from now*. *I have seriously thought about leaving this company*. The three had a high α correlation of 0.85 (p. 461). The questions were limited to the first two items given that they are less ambiguous, clearly measure different dimensions, reliability needs to be assessed, and unnecessary sensitive questions may lead to balking and incomplete surveys.

6) Person – organization fit: The following two Cable and DeRue (2002) items measured person-organization fit: *The things I value in life are very similar to the things my organization values* and *My personal values match the organization's values and culture*.

7) Person-supervisor fit (P-S) and person-group fit (P-G): P-S and P-G fits were assessed in the second version of the youth leader survey. These types of fit have a lower correlation to perceived job satisfaction than P-O and P-J fits are less commonly studied (Kristof-Brown et al., 2005a).

<u>Variables – Categorical or Nominal Data</u>

8) Job Description: The following questions measured job description existence, accuracy, periodic review frequencies with supervisor(s) and customization.

Branching was used to skip irrelevant questions within the electronic survey based on answers to previous questions. For example if a no response is received for question number *a* then all remaining job description questions are skipped.

a) Do you have a job description for your current job?

b) Is your job description used?

c) Have you and your supervisor identified gaps between your job description requirements and your capabilities?

d) Do your task assignments have priorities?

e) Do you have estimates for your time allocation to each task?

f) My job description accurately describes by job responsibilities.

g) Do you and your Supervisor(s) review your job description periodically?

h) How frequently do you review your job description?

i) Who initiated the job design change?

j) Is your job description modified to reflect any of the following?

k) If tasks were eliminated from your job description then where were they reassigned?

9) Kano Satisfaction Questions: The Kano analysis was performed to better understand the importance of a change. It is used to help improve a product, service or process (George, Rowlands, Price, & Maxey, 2005). A pair of Kano-styled questions were asked to measure the job incumbent's qualitative satisfaction expected from a custom job description. The functional form of the question was: *How would you feel if your job description is customized to match your strengths, experiences and preferences*?

The dysfunctional form of the question was: *How would you feel if your job description is a listing of job responsibilities common to most lean leaders*? The questions indicated if the job description customization is considered to be a *Surprise & Delight*, *More-is-Better*, *Must-Be* or *Dissatisfier*.

10) Open Ended Question: The following open-ended questions were asked: *How might you and your supervisor(s) better design or use your job description in order to improve your job effectiveness*? And, *Please think of a specific situation when your job design was modified to enhance your effectiveness. Why and how was it modified*? Responses were categorized to report how and why jobs have been effectively customized; however, the limited number of responses and terse descriptions were inconclusive.

11) Task Assignment Tool Data Collection: Leader subjects selected a routine, problem solving, and project oriented task from a list of three based on the perceived impact on their job outcomes. They provided task assignment tool input parameter data by responding to nine items for each of the three tasks assessed. They also provided answers to 15 items that measured their task performance preferences.

Preferred Behavior Type

A combination of two survey items provided the inputs to assign the preferred behavior levels as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness* (*DiSC*). Marston (1928) identified four *primary emotions* and associated behavioral responses,

which today Inscape Publishing (2004) describes as DiSC. The concepts of perceived power and perceived favorability to the environment were created in the 1980s. These concepts aligned with Marston's work, but they were impractical for providing normal emotions insight. Inscape Publishing found more contemporary language that supports the Marston model and was more effective in conveying meaningful behavior that is easily put into practice. The model as illustrated in Figure 15 has vertical and horizontal dimensions with a moderate to strong correlations with the two DiSC dimensions (Inscape Publishing, 2004).

Appendix F contains the Inscape Publishing, Inc. authorization agreement. The preferred behavior items have been correlated to the results that would be collected from the administration of the full 28 question DiSC instrument. The DiSC labels serve as natural preferred behavior groupings as defined by the questions. The questions were developed by Inscape Publishing, Inc. ©2004.

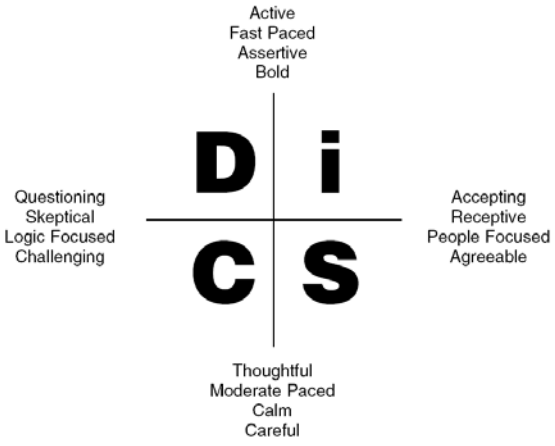


Figure 15. DiSC Dimensions

Large Sample Low Content Versus Smaller Sample High Content

The data were collected with a large sample and relatively less data than what might be collected with a smaller sample data collection method. Surveying a large population enables more precise statistical comparisons and the random sampling across the population controls the effects of special causes of variation and demographics not studied. Direct interviews or longer surveys were not performed; however, they would enable the collection of data for additional variables and open-ended question feedback. The additional data might enable the identification of unknown root-causes of variation and the additional variables might enable partial correlation studies to better understand the additional variable impact.

A survey of the two large populations is convenient due to the existence of professional groups that have agreed to submit the survey to their large member populations. The professional groups are also interested in reporting the results to their constituencies. The cost, time, and quality of the data collection for the large quantity survey are good due to the existence of electronic survey tools. However, the time required to complete the survey, and associated data collected, must be minimized to reduce the cost to the responders, to increase the response rate, and to reduce the response error rate.

An electronic survey sent to members of two professional societies was selected as the instrument for data collection. The samplings were considered a non-probability or a convenience sample given that professional societies were chosen for each group. A

survey question also confirmed the participant's *primary* job responsibility as either a lean leader or youth leader.

Reliability

General Reliability

The information gathered was consistent because the wording was simple and the questions were clear and precise. The pilot studies reduced measurement error by identifying and clarifying items that were difficult to understand.

Equivalence and Internal Consistency

Alternate-form reliability was assessed by presenting two or more items for each key study variable. Internal consistency among items measuring the same construct was assessed using Cronbach's alpha reliability test. Alpha values greater than 0.70 are generally considered acceptable (Nunnally, 1983). Electronic and printed surveys presented the survey items with common format and scales to reduce measurement error.

Validity

General Validity

Professionals in their respective fields assessed the validity of the study by confirming that the instrument assessed what it is designed to measure. The additional pilot survey items assessing the survey purpose and question clarity were part of the validity assessment. Survey items from other validated studies identified in the literature review were used when available.

Face and Content Validity

An initial survey version was tested for face and content validity. Four professional youth leaders reviewed the youth leader survey and six lean professionals reviewed the lean leader survey. The surveys were mailed to each of them with the following instructions.

> Open the attachment (file name) and critique the survey as if you were taking it. It will be sent in an electronic survey format but I think that the content is understandable in the WORD format. I would like your comments with regard to ambiguity; unclear terminology; questions that might lead you to balk and not complete the survey etc. Additionally, please think about the content. Did I miss key responsibilities or include the trivial? Does it make sense?

Survey feedback confirmed confusion over redundant questions designed to assess question reliability; two questions were eliminated from both surveys. Changes to

correct terminology, grammatical errors, and requests to clarify the questions were incorporated. The survey length was deemed reasonable and the purpose and content were understood without help from the administrator. The definitions used within the surveys are clear and each item asks a single question. Complete sentences were used and abbreviations were avoided. Demographic questions that might be interpreted as too personal or uninteresting are placed at the end of the survey to increase the percent of participants who answer the key variable questions (Bourque & Fielder, 2003).

The face validity of the surveys was tested by three groups. Lean leader and youth leaders reviewed their respective surveys. Western Michigan University graduate students assessed the lean leader survey clarity, ease-of-use and time required to complete. Feedback and changes were logged.

Criterion Validity

Regression analysis assessed the correlations among job satisfaction, task performance, intent to quit, and P-J fit. Concurrent validity was assessed by comparing the results to a previous study using the same questions. Scale reliabilities between person-job fit and outcome measures were compared to Cable & DeRue's (2002) study results that administered the same person-job fit survey items. Outcome and person-job fit correlations were compared to the (Kristof-Brown et al., 2005a) meta-analysis results. Job customization questions comparing the fit of the job characteristics with job holder KSACs were not identified in literature so concurrent validity was not tested. There is no claim that the job customization measures or questions are better than an unknown existing set of questions.

Construct Validity

A second version of the youth leader survey collected data to compare and correlate the job customization measures with two other job design models in order to measure the correlation between job customization variables with other factors known to affect job satisfaction and intent to quit. The survey content is summarized in Table 12.

Table 12. Youth Leader Validation Survey Content

Item(s) Source	#Items	Variable Measured
Inscape Publishing (2005)	2	Preferred behavior, DiSC
Dissertation	2	Job customization
	8	Demographics
	7	Job description characteristics & use
Job Content Questionnaire Karasek et al. (1998)	6	Co-worker social support
	3	Decision authority
	7	Skill discretion
	5	Supervisor social support
Job Characteristics Survey Hackman and Oldham (1980)	2	Feedback from agents
	1	Task identity
	2	Task significance
	2	Job satisfaction
Lauver et al.(2001)	2	Intent to quit
Cable & DeRue (2002)	3	Person-Job Fit: Demands-Abilities
	3	Person-Job Fit: Needs-Supplies
	2	Person-Organization Fit
Scroggins (2003)	2	Person-Job Fit: Self-Concept-Job Fit
Gilbert et al. (2008)	15	Person preferences

Questions from the Job Content Questionnaire (JCQ) were asked regarding supervisor and co-worker social support, decision authority, feedback, and skill discretion. Data from the JCQ were compared to national standards and correlated with the job-customization questions. Questions regarding skill variety, task identity, task significance, autonomy and feedback are job characteristics that are part of the Job Characteristics Model that were asked. The characteristics measured in these two models are expected to have positive correlations with the job customization questions. In addition, the job customization questions should have similar strong positive correlations

with job satisfaction and negative correlations with intent to quit. These survey questions replaced the task assessment questions and were sent to approximately half of the surveyed youth leaders to assess the correlation with the job customization questions.

The Job Content Questionnaire (Karasek et al., 1998) is a well-developed questionnaire with nationally standardized scores. The survey is administered from the Job Content Questionnaire Center at the University of Massachusetts, Lowell. The process for requesting survey use rights are documented on their web site.

Generalization of the Study Results

The generalization of the results from youth leaders to lean leaders can be made first because they can both be classified as knowledge workers with a large variety of non-routine tasks. Second, they both have task groups or competencies that are capable of being defined as a set of work packages that can be reassigned. Third, the job competencies are similar as indicated in Table 13.

Fourth, job task requirements of both can be characterized as non-routine or organic (Liker & Meier, 2007, p. 93). Liker and Meier offered a lean expert as an example of a job with non-routine tasks, high task variety and low task analyzability. They also further characterized non-routine workers as those who often move between unique tasks that require spontaneous thinking, reasoning and decision making. Lean leaders are required to adapt to their situations and must have strong interpersonal skills (Liker & Meier, 2007).

Table 13. Lean Leader and Youth Leader Competency Comparison

#	Lean Leader Competencies	Youth Leader Competencies
1	Communication	Communication
2	Leadership	Leadership
3	Facilitation	Facilitation
4	Process mapping	
5	Change implementation support	
6	Feedback	Feedback
7	Learning	Learning
8	Measurement	Measurement
9	Problem solving	Problem solving
10	Teaching	Teaching
11	Lean principles	Youth leadership principles
12	Lean tools knowledge and application	
13	Exhortation or encouragement	Exhortation or encouragement
14	Data collection & analysis	
15	Mentoring	Mentoring
16	Networking	Networking
17	Project management	Project management
18	Standardizing work	
19	Team management	Team management
20	Kaizen improvement events	Outreach events
21	Recognition & celebration	Recognition & celebration
22	Selling	Selling
23	Strategic Planning	Strategic Planning
24	Auditing	
25	Process knowledge	
26	Role model for lean application	Role model
27	Status updates	Status updates
28	Subject matter expertise	Subject matter expertise
29	Organization	Organization
30	Cost reduction	Budget management
31	Quality tools and systems	
32	Documentation	Documentation
33	Promotion – Lean principles & application	Promotion – Programs & life applications
34	Scheduling and planning	Scheduling and planning
35	Supervision	Supervision
36	Benchmarking	Benchmarking
37	Special projects	Special projects
38	Costing or cost accounting	
39	Six Sigma application	
40	Information systems	

The same survey question items were asked to both the lean leaders and youth leaders to collect the data necessary to test and evaluate this study's hypotheses. Key measures were collected through multiple survey items to assess the reliability of the responses for each group. The regression analysis was used to identify variable relationships enabling comparisons or generalizations between the two groups.

Training would be required for a youth leader or lean leader to perform each other's job. However, the following common tasks could be performed without special training: communication, leadership, facilitation, feedback, teaching, mentoring, networking, team management, team event planning, selling ideas, status updates, budget management, promoting programs, scheduling and planning, supervision and basic computer skills.

Why were youth leaders selected to test the hypotheses? Youth leaders meet the operational definition of a knowledge worker with a variety of non-routine tasks. They have a high likelihood of job customization and the ability to delegate or transfer tasks to co-workers or volunteers. Youth leaders have a common mission but flexibility with their approach to the job. It is a large population with a variety of responsibilities and approaches to job design. The large population provided an opportunity to collect more samples for greater statistical power and the option to use a second survey to test job customization question validity and assess relationships between four person-environment subcategories. Their population is accessible through professional organizations and a relative high response rate is expected due to the noble response motive of improving youth leader job design to improve their impact on the youth they lead. Appendix C contains a listing of 16 youth related job descriptions that can be

considered subsets of a youth leader's job. A sample of a youth pastor job description and a youth outreach leader are also included in Appendix C (Gilbert, 2001). The author has personal knowledge of the youth leader job developed from interviewing, hiring, indirect supervision as a board member, customer role as both a student and parent, and participation in writing a customized youth leader job description.

Instrumentation

The electronic Qualtrics survey software package and paper surveys were used to collect the survey data. The survey URL link was posted on professional organization newsletters and mailed directly. The Qualtrics package enabled skipping or branching around unnecessary questions, data processing defect reduction, survey expense minimization, and the delivery of a visually stimulating survey format to increase the probability of full survey completion.

Electronic Survey Limitations

Denscombe (2006) completed a school based health study of the differences in both content and response rates for mail and web-based surveys. The study found the electronic survey method was reliable, little evidence of any difference in survey results, and slightly higher full survey completion rates**.** He concludes his study by encouraging social researchers to use web-based survey questionnaires with confidence.

The article *Compensating for Low Topic Interest and Long Surveys: A Field Experiment on Non-response in Web Surveys* (Marcus, Bosnjak, Lindner, Pilischenko, &

Schutz, 2007) addressed four factors that affect survey non-responses with a designed experiment. The factors were high versus low topic salience, short versus long survey and lottery incentive versus no incentive. Other factors included no feedback and general feedback of study results versus personal feedback (individual profile of results). The results showed that salience and survey length had sizable effects in electronic surveys just as they do on mail surveys. The study does show that offering personal feedback (not generalized) can improve return rates on a low salient survey. Small incentives were shown to be effective in short surveys but they may have a negative effect on longer surveys where they heighten the respondents' awareness that they are asked more than they were offered in return (Marcus et al., 2007).

The survey research confirmed that the survey length should be minimized. Although this study's surveys appear to be long, efforts were made to minimize the length and face validation reviews confirmed that it was long but reasonable given the topic salience. Personal feedback directly to each respondent would be costly, difficult, and affect the anonymity of the survey. The expectation that results would be posted on their member website was expected to improve the response. The option to add a minor incentive was not accepted due to the possibility of a negative effect.

Porter and Whitcomb performed a study regarding the effect of the e-mail subject line. They tested four options including: *survey*, *name of the university*, *request for assistance*, a blank subject line and combinations of each. The blank subject line received the highest read or click rate of 24.2 percent and a response rate of 18.8 percent. The second highest was *Request for Assistance* with a click rate of 23.2 percent and a response rate of 17.5 percent (Porter & Whitcomb, 2005). This survey web-link was

placed in organization newsletters. The number of newsletter article words were minimized, the organization leader's appeal of value to the organization must be clear, the display must be eye-catching and simple and the web-link must be prominently placed.

Samples and Populations

Lean Leaders

The lean leader subjects were from the 2,300 members of the lean division of the Institute of Industrial Engineers (IIE) organization. Member participation was requested within an e-mail sent directly to each member. The e-mail contained the survey URL-link. Lean leader data were also collected at the IIE Operational Excellence Conference held on October 26 and 27, 2009, in St. Louis, Missouri.

Youth Leaders

The size of the youth leader population is large but unknown. The US Census information is not broken down to the youth leader level. The SOC Code is 21-2011 and Occupation Code is 2040 and this includes all other types of church roles. The 2006 U.S. Department of Labor Bureau of Labor Statistics reported employment for the 21-2001 code at 404,396 with an expected growth faster than average job growth rate of 18.9 percent to 480,687 jobs in 2016. A Barna Group 2001 survey reported that 87 percent of Protestant churches have a full-time paid pastor and 19 percent of Protestant churches have a full-time youth pastor (Barna, 2001). There are an estimated 300,000 Protestant churches in the United States according to the Hartford Institute for Religion Research

(Lummis, Nieman, Roozen, & Thumma, 2010). Therefore, there are an estimated 57,000 Youth Pastors from Protestant churches within the United States that are part of the 404,687 church worker role's included in the Operation Code 2040.

Youth leader data were collected at the Youth Specialties Youth Leader Conference held on October 31, 2009, in Cincinnati, Ohio via paper copy surveys. The *Youth Specialties* organization has approximately 22,000 members of the *Youth Specialties* (youthspecialties.com) organization and participation was planned to be requested with an article in the *Youth Specialties* newsletter that is sent to each member. *Youth Specialties* did not allow the posting of the survey request due to a pending organization change. The survey URL address was posted in the *Youth Movement* and *Youth Worker Journal* newsletters.

Expected Response Rates

The response rates for both surveys were expected to be less than ten percent given: the survey link was offered in newsletters, there were no direct incentives to participate, and that the survey was relatively long taking approximately 20 minutes to complete. The features that were expected to enhance return rates include: survey endorsements by organization leaders, a catchy newsletter slogan, the commitment to share a results summary with their organizations, and a noble response motive. The topic was expected to be interesting to the participants and the responses were anonymous. The reading level was appropriate for the audience and it was pre-assessed by professionals within their respective disciplines. A five percent return rate from the

youth leader survey was expected to yield over 1,000 participants which would enable conclusions to be drawn regarding the job customization effect. The catchy slogan for this survey was: *Do you fit your job or does your job fit you*?

CHAPTER V

RESULTS

The data were collected from subjects who classified their job as either a lean leader or youth leader. Appendices A and B contain the survey instruments. The surveys were administered via both a paper copy and a URL web link to an electronic survey. The survey data were collected during the months of October, November and December of 2009.

Response Completion Rates

Table 14 summarizes the number of respondents and the survey completion rates. Completion rates for both electronic and paper survey response are reported.

Table 14. Survey Response Statistics

Survey Statistic	Lean Leader	Youth Leader	Total
Total Responders	156	165	321
Paper Copy	19	60	79
Electronic - URL	137	105	242
# Usable Responses	113	141	254
Unusable	43	24	67
% Returned Usable	72.4%	85.5%	79.1%
Data Type			
Measure Validation		69	69
Task Assessment	113	72	185
# Tasks Evaluated	235	186	421
Average # of Tasks Assessed per Survey	2.1	2.6	2.3

The actual number of surveys delivered to subjects was estimated but not recorded given the processes for distributing the surveys. An actual return rate of 25 percent was estimated for surveys presented with a direct verbal request with a need presentation. An actual return rate of five percent was estimated for direct e-mail requests to the lean leader professional society. An actual return rate of two percent was estimated for the monthly organization *Newsletter* participation requests. The estimated return rates met expectations that were lowered due to the expected twenty-minute survey completion time and the personal job assessment questions asked.

Sample Size

The quantity of samples required was driven by the quantity needed to develop models that predict task performance for routine, problem solving and project tasks using independent person-task fit and person characteristic variables. Tabachnick and Fidell (2001) recommend the following formula for calculating sample size requirement: $N > 50 + 8$ m (where m = # of independent variables). The study sample sizes were large enough to use 10 or 11 predictor variables for each of the routine, problem solving and project task performance prediction multivariate models. Table 15 summarizes the quantity and description of the person-task assessments. Task assessments were requested for routine, problem solving and project tasks.

Table 15. Task Assessment Selection by Subject Group

Task Descriptions	Task Type	# Responses	
		Lean Leader	Youth Leader
Develop measurement systems	Project Tasks	29	
Lead improvement events		47	
Plan recognition events		3	
Plan youth events			46
Raise funds			2
Recruit and train youth leaders			15
Audit project results to plan	Problem Solving Tasks	47	
Facilitate improvement team meetings		14	
Correct inappropriate person behaviors		21	4
Counsel youth			24
Evaluate and make corrections to programs or processes			33
Communicate to group and organization	Routine Tasks	21	25
Flow chart or characterize processes		43	
Teach lean principles and tools		10	
Track and record progress to goals			5
Visit youth (school, event, home, restaurant etc.)			32
Total Task Assessments by Subject Group		235	186

Response Times

The electronic surveys were placed on the *Qualtrics* web site for anonymous responses to the survey. The electronic survey response times ranged from 3 minutes to multiple hours as recorded from the *Qualtrics* statistics. The average response time for those surveys taking less than 1 hour to complete was 13.7 minutes.

The descriptive results reports differences between the two subject groups, demographics, perceived value of a customized position description, validity, person-environment fit measurement comparison to a meta-analysis, and variable correlations. The objective hypotheses evaluations are reported in Chapter V.

Subject Group Comparisons

Table 16 summarizes the measures where lean leaders and youth leaders reported significantly different measurement levels. Confidence intervals are presented to show the interval where the population mean difference is expected. The relative few differences within the population data support the value of including both groups within the study to better generalize the results.

Lean Leader Differences

When the lean leader group was compared to the youth leader group, lean leaders reported higher intent to quit their job, higher overall task performance, and greater expectation for being promoted to higher levels within their organization. Lean leaders reported a higher preference for tasks that require working with, studying about, building or repairing things and tasks that require working with numbers, analyzing numbers, and keeping data records. Lean leaders indicated a greater preference for tasks that require studying information, retaining it and using it and tasks where results are known and the positive value to the organization is understood. Lean leaders show a greater preference for thinking in terms of ideas, concepts, theories, creative thinking and research. Lean leaders also characterized their preferred behavior as more questioning, more results focused and direct. See Table 16 for a summary of the significant differences. The less powerful non-parametric Mann-Whitney test for equal medians confirmed the differences but did not indicate significant differences for promotion expectations or working in terms of ideas, concepts, theories, creative thinking and research.

Table 16. Significant Differences Between Lean Leaders and Youth Leaders

Measure	Subject Groups		Measured Difference (LL – YL)		
	Lean Leader	Youth Leader	95% CI Lower	95% CI Upper	P-value
Job Satisfaction	5.66	**6.03**	-0.625	-0.107	0.006
Intent to Quit	**3.76**	2.79	0.502	1.442	0.000
Task Performance	**5.80**	5.48	0.037	0.583	0.026
Person-Org Fit	5.09	**5.64**	-0.898	-0.195	0.002
Person-Job Fit (Need-Supplies)	4.75	**5.29**	-0.898	-.0192	0.003
Promotability	**2.26**	1.93	0.149	0.506	0.000
Preferences					
WI: Mechanical	**5.06**	3.94	0.578	1.673	0.000
WI: Numbers	**5.23**	2.59	2.165	3.124	0.000
WI: Study	**5.68**	5.03	0.281	1.005	0.001
WI: Help Others	5.79	**6.27**	-0.834	-0.129	0.008
WV: Get Along	4.95	**5.45**	-0.862	-0.140	0.007
WV:Results Focus	**6.20**	5.77	0.118	0.724	0.007
Prefer Guidance	4.76	**5.39**	-1.067	-0.188	0.005
Prefer Ideas	**6.20**	5.71	0.126	0.849	0.009

2-Sample T-Test, **Bold font** indicates subject group with the highest measure level
Scales: 1 - low to 7 - high; Promotability Scale: 1 - current level job to 3 – organization's top-level jobs

Youth Leader Differences

When the youth leader group was compared to the lean leader group, youth leaders reported greater satisfaction with their job, greater person-organization fit, and greater needs-supplies job fit (needs being supplied by their job). Youth leaders had a higher level of preference for tasks that require caring for, coaching, helping others and tasks that allow them to be well liked and get along with others. Youth leaders had a greater preference for tasks where guidance is given to clarify task expectations and for tasks that have helpful training and specific instructions. Youth leaders also characterized their preferred behavior as more accepting, enthusiastic, and sociable. Table 16 reports a summary of the significant differences between the two subject groups. The less powerful non-parametric Mann-Whitney test for equal medians did not show significant differences for the work values of *getting along* or being *well liked*.

Demographics

The demographics are summarized in Tables 17 through Table 23. Lean leaders were significantly older, more likely to be male, reported higher levels of education, and had more years of experience as a leader than the youth leader group. Forty-five percent of the lean leaders indicated that industrial engineering was the best description for their post secondary degree(s). Thirty-one percent of the youth leaders reported that one or more of their degrees focused on the youth leader job.

There was a significant positive correlation between the job customization measure and reported age with a p-value of 0.004**. Table 17 reports statistics for age by subject groups. The least square and rank order regression equations are summarized in Table 18. Rank order regression is a non-parametric technique.

Table 17. Age by Respondent Group

Age Grouping	Lean Leaders		Youth Leaders	
	Count	%	Count	%
17-21	0	0%	0	0%
22-26	12	15%	22	17%
27-31	7	9%	36	28%
32-36	9	11%	20	16%
37-41	11	13%	12	9%
42-46	10	12%	12	9%
47-51	12	15%	12	9%
52-56	11	13%	11	9%
57-61	7	9%	2	2%
62-66	3	4%	1	1%
67-71	0	0%	0	0%
Mean Age	42.1 years		36.0 years	

Table 18. Regression: Job Customization and Age

Independent Variables	Regression Coefficients				R^2	P value ($\alpha = .05$)	F Value
	Least Square		Rank Order				
	B_0	B_1	B_0	B_1	Least Square		
Youth & Lean Leader Age	3.86	0.142	3.83	0.167	3.9%	0.004**	8.33
Lean Leader Age	3.67	0.179	3.83	0.167	7.0%	0.018*	5.84
Youth Leader Age	4.00	0.142	3.94	0.125	1.9%	0.122	2.42

Job Customization Level = $B_0 + B_1 * ((\text{Age} - 19)/5 + 1)$
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

There were significant differences between gender and three of the fifteen personal preferences. There were no significant differences for the lean leader group but there were significant differences among youth leaders when analyzed by gender. The three variables were not included in the three person-task fit assignment models. See Table 19 for a summary of gender occurrence by subject group and Table 20 for a summary of the differences by gender.

Table 19. Gender by Group

Gender	Lean Leader		Youth Leader	
	#	%	#	%
Male	62	75.6%	62	48.1%
Female	20	24.4%	67	51.9%

Table 20. Gender Differences

Question	Values = Male – Female		
	Lean and Youth Leader	Lean Leader	Youth Leader
"I prefer tasks that require working with, studying about, building or repairing things."	1.0 0.000***	No Sig. Δ	2.5 0.011*
"I prefer tasks that require studying information, retaining it and using it."	1.0 0.008**	No Sig. Δ	1.0 0.008**
"I prefer tasks that require caring for, coaching, or helping others."	1.0 0.004**	No Sig. Δ	1.0 0.041*

Kruskal-Wallis Median Test
Table reports the differences between the gender averages and p-values
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

The non-parametric Mood Median test for equal medians indicated that there were no significant differences in the frequency of job customization, job outcomes or person-environment fit by education level. However, there were significant differences for lean leader education level in measures of person-job fit, intent to quit. Table 21 lists the reported education level of both subject groups.

Table 21. Education Level by Group

Highest Degree	Lean Leader		Youth Leader	
	#	%	#	%
High School	0	0%	12	9%
Associate	2	2%	8	6%
Bachelor	32	39%	58	45%
Masters	43	52%	48	37%
Doctorate	3	4%	0	0%
None of Above	2	2%	3	2%

Lean leaders with associate's degrees reported significantly lower levels of person-job fit than those with masters and doctorate degrees and those with a bachelor's degrees reported significantly lower levels of person-job fit than those with doctorate degrees. Those with associate degrees reported a significantly greater intent to quit than those with a doctorate degree.

There were significant correlations between leader role experience and both task performance ($r= 0.249^{**}$, $p = 0.003$) and job demand-abilities fit ($r = 0.158^{*}$, $p = 0.023$). The lean leader's perception of both task performance and job demand-abilities fit were positively correlated with on-the-job experience. There were no other significant correlations between job experience and job customization, job outcomes or person-

environment fit. Table 22 summarizes the responses for: *How many years have you held a title similar to (lean or youth) leader?*

Table 22. Experience in Job Similar to Leader Role

Years in Leader Job	Lean Leaders		Youth Leaders	
	#	%	#	%
0-1	0	0%	0	0%
2-6	12	15%	22	17%
7-11	7	9%	36	28%
12-16	9	11%	20	16%
17-21	11	13%	12	9%
22-26	10	12%	12	9%
27-31	12	15%	12	9%
32-36	11	13%	11	9%
37-41	7	9%	2	2%
42+	3	4%	1	1%
Avg. Years	22.1 years		16.0 years	

Using the non-parametric Mood Median test for equal medians there were no significant differences in the frequency of job customization, job outcomes or person-environment fit by lean leader education discipline.

Table 23 lists the reported education discipline frequency for lean leaders. Thirty-one percent of youth leader degrees focused on youth leadership.

Table 23. Lean Leader Education Discipline

Degree Discipline - Best Fit	Lean Leaders	
	#	%
Industrial Engineer	36	45%
Engineer – Other	15	19%
Business Admin.	11	14%
Manufacturing Engr.	8	10%
Other	4	5%
Physical Sciences	3	4%
Education	2	3%
Social Sciences	1	1%

Validity

Criterion validity was assessed by comparing the Job Customization measure with other factors known to have positive correlations with the study's outcome variables. Questions from the Job Content Questionnaire (Karasek et al., 1998) were asked regarding supervisor and co-worker social support, decision authority, feedback, and skill discretion. Questions regarding skill variety, task identity, task significance, autonomy and feedback are job characteristics that were selected from Hackman and Oldham's (1980) Job Characteristics Model. The characteristics measured in these two models exhibited non-significant positive correlation coefficients with the job customization questions but with values less than 0.30. Cohen (1988) suggested the following guidelines for interpreting the strength of correlation: Small or Low: r = 0.10 to 0.29; Medium: r = 0.30 to 0.49; Large or High: r = 0.50 to 1.0. The correlation between job customization and feedback was significant at 0.250 with a p-value of 0.045. Table 24

summarizes the regression coefficients for the measures with known correlations with the outcome and person-job fit measures.

Table 24. Regression: Job Customization and Person-Environment Fit Factors

Independent Var.: Significant P-E Fit Factors	Regression Coefficient		R^2	P value ($\alpha = .05$)	F Value
	Least Square	Rank Order	Least Square		
Co-Worker Support	0.123	0.097	4.5%	0.086	2.03
Decision Authority	0.019	0.000	0.1%	0.810	0.06
Skill Discretion	0.058	0.000	2.1%	0.246	1.37
Supervisor Support	0.090	0.090	1.9%	0.280	1.19
Feedback	0.188	0.200	6.2%	.045*	4.20
Job Significance	0.052	0.062	0.9%	0.451	0.58

p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

The job customization measure had a significant positive correlation with job satisfaction and a significant negative correlation with intent to quit when all data are included as measured in Table 24. Sixty-nine youth leaders completed the survey designed for custom job reliability testing. Questions to develop the six additional job assessment measures replaced the task assessment questions. The resulting correlation matrix is included as Table 25. Table 25 summarizes the job customization measure correlation coefficients for predicting these known person-job fit factors. The feedback and job customization measures had a positive correlation. The comparisons further confirm the validity of this job customization measure construct.

Table 25. Job Customization Criterion Validity Test – Correlation Matrix

P-E Job Measures	Job Custom-ized	Job Satis-faction	Intent to Quit	Person - Org. Fit	Person - Job Fit	Co-worker Support	Decision Auth-ority	Skill Discre-tion	Super-visor Support	Feed-back
Job Satis-faction	.277 *	1								
	.022									
Intent to Quit	-.187	-.588 ***	1							
	.125	.000								
Person - Org. Fit	.137	.460 ***	-.420 ***	1						
	.262	.000	.000							
Person - Job Fit	.308 *	.722 ***	-.595 ***	.533 ***	1					
	.011	.000	.000	.000						
Co-worker Support	.211	.436 ***	-.477 ***	.350 **	.303*	1				
	.086	.000	.000	.004	.014					
Decision Auth-ority.	.030	.387 **	-.398 **	.465 ***	.392 **	.345 *	1			
	.810	.001	.001	.000	.001	.005				
Skill Discre-tion	.144	.259	-.402 ***	.256 *	.408 **	.285 *	.209	1		
	.246	.070	.000	.036	.001	.021	092			
Super-visor. Support	.137	.488 ***	-.482 ***	.376 **	.366 **	.702 ***	.489 ***	.307 *	1	
	.280	.000	.000	.002	.003	.000	.000	.015		
Feed-back	.250 *	.489 ***	-.515 ***	.313 *	.564 ***	.386 **	.463 ***	.326 **	.481 ***	
	.045	.000	.000	.011	.000	.002	.000	.009	.000	
Job Signif-icance	.094	.362 **	-.115	.318 **	.283 *	.276 *	.316 *	.199	.271 *	.375 **
	.451	.003	.359	.009	.023	.027	.011	.116	.034	.002

Table presents Pearson's correlation coefficients (r) above the p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Cronbach's alpha for the two job customization questions was 0.764 which is greater than the 0.70 threshold indicating internal consistency. The regression coefficients in Table 27 support a positive correlation between job-customization and

both person-job fit and job satisfaction. A negative correlation between job customization and intent to quit was also supported. Regression coefficients for all three components of the person-job fit measures also support a positive correlation with the job customization measure and are summarized in Table 38 on page 161.

Person-Environment Fit

Table 26 summarizes a person-environment fit meta-analysis (Kristof-Brown et al., 2005a), correlation results, and a comparison with this study's values. The correlation between job satisfaction and person-job fit in this study was greater than the upper 95 percent confidence interval limit from the 23-study sample.

Table 26. Meta-Analysis: Person-Job and Person-Organization Fit

Outcome Variable – Perceived	Fit Type	Number of Studies	Lower 95% CI	Upper 95% CI	"r" 2005	"r" this study
Job Satisfaction	Person-Job	23	.23	.67	.58	.77
Job Satisfaction	Person-Org	30	.23	.67	.56	.58
Overall Performance	Person-Job	3	(.25)	.61	.22	.20
Overall Performance	Person-Org	7	(.10)	.30	.12	.17
Intent to quit	Person-Job	11	(.65)	(.15)	(.49)	(.63)
Intent to quit	Person-Org	24	(.61)	(.25)	(.52)	(.56)

Source: (Kristof-Brown et al., 2005a)
Note: CI interval ranges for Person-Job and Person-Org versus Job satisfaction were both .23 to .67.

Table 27 reports the correlation matrix for the custom measure and job outcomes recorded from the 132 cases that provided complete data. Correlations between job satisfaction and both person-job fit were strong when compared to the meta-analysis 95 percent confidence levels. Similarly the intent to quit measure had a strong negative correlation with both person-job fit and person-organization fit. The measure of task

performance had a non-significant correlation with all outcome measures which was also reported in the meta-analysis study.

Table 27. Lean and Youth Leader Outcome Correlation Matrix

Measures	Customized Job	Person-Job Fit	Person-Org Fit	Intent to Quit	Job Satisfaction	*N*
Person-Job Fit	0.350***					215
	0.000					
Person-Org Fit	0.189**	0.601***				226
	0.006	0.000				
Intent to Quit	-0.184**	-0.631***	-0.555***			222
	0.008	0.000	0.000			
Job Satisfaction	0.238***	0.765***	0.581***	-0.664***		225
	0.000	0.000	0.000	0.000		
Task Performance Average	0.088	0.201*	0.168*	-0.044	0.092	149
	0.294	0.018	0.042	0.604	0.266	

Table presents Pearson's correlation coefficients (r) and p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05
N = Sample Size; Customized Job *N* = 213

Tables 28 and 29 compare the correlations between the lean leader and youth leader job customization measure and job outcomes. There were significant correlations between youth leader job customization and all outcome measures as reported in Table 29. The youth leader performance ratings on the tasks that they were asked to evaluate were significantly correlated to the other study outcomes. The youth leader sample sizes were larger than for the lean leader group resulting in greater power to measure correlation significance.

The correlation coefficients for lean leader job customization and the outcome variables of job satisfaction and intent to quit would have significant p-values less than 0.05 if their sample size quantities were 89 for job satisfaction and 113 for intent to quit. The actual sample sizes were 80 for job satisfaction and 79 for intent to quit. The lean leader performance ratings on the tasks that they were asked to evaluate were poor

predictors of job customization, person-job fit, persons-organization fit, intent to quit, and job satisfaction.

Table 28. Lean Leader Outcome Correlation Matrix

Measures	Customized Job	Person-Job Fit	Person-Org Fit	Intent to Quit	Job Satisfaction	*n*
Person-Job Fit	0.377**					82
	0.001					
Person-Org Fit	0.048	0.519***				88
	0.675	0.000				
Intent to Quit	-0.185	-0.665***	-0.569***			87
	0.103	0.000	0.000			
Job Satisfaction	0.209	0.762***	0.575***	-0.678***		88
	0.062	0.000	0.000	0.000		
Task Performance Average	-0.204	0.051	0.078	-0.041	0.062	86
	0.068	0.657	0.478	0.710	0.577	

Table presents Pearson's correlation coefficients (r) and p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05
n = Sample Size; Customized Job *n* = 82

Table 29. Youth Leader Outcome Correlation Matrix

Measures	Customized Job	Person-Job Fit	Person-Org Fit	Intent to Quit	Job Satisfaction	*n*
Person-Job Fit	0.383***					133
	0.000					
Person-Org Fit	0.291**	0.641***				138
	0.001	0.000				
Intent to Quit	-0.230**	-0.582***	-0.508***			135
	0.009	0.000	0.000			
Job Satisfaction	0.295**	0.752***	0.570***	-0.622***		137
	0.001	0.000	0.000	0.000		
Task Performance Average	0.328**	0.452***	0.323**	-0.196	0.260*	63
	0.009	0.000	0.010	0.130	0.039	

Table presents Pearson's correlation coefficients (r) and p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05
n = Sample Size; Customized Job *n* = 131

Knowledge Worker Preferences

Gilbert et al.'s (2008) summary developed a unique set of personal preferences that were correlated with their real world work choices. Fifteen of the 17 constructs were

related to person-task fit. Table 30 contains the correlation matrix for the 15 constructs included in this study. Preference definitions can be found in Table 11 on page 105.

Table 30. Observed Work Preference Measure Correlation Matrix

Factors	Things	Numb-ers	Study	Take Charge	Help Others	Indep-endent	Get Along	Postive Value	Team	Guide	Ideas	Plan	Free-dom	Read
Numbers	0.431	1.000												
	0.000													
Study	0.296	0.311	1.000											
	0.000	0.000												
Take	0.155	-0.001	0.145	1.000										
Charge	0.066	0.989	0.088											
Help	-0.080	0.307	-0.006	0.263	1.000									
Others	0.342	0.000	0.945	0.002										
Indep-	0.090	0.057	0.082	0.073	-0.220	1.000								
endent	0.282	0.505	0.337	0.392	0.008									
Get Along	-0.054	0.102	-0.132	0.120	0.189	0.147	1.000							
	0.520	0.227	0.117	0.158	0.024	0.081								
Postive	0.084	0.133	0.079	0.290	0.100	0.025	0.110	1.000						
Value	0.314	0.115	0.348	0.000	0.232	0.763	0.190							
Team	0.144	-0.003	0.036	0.235	0.508	-0.219	0.298	0.303	1.000					
	0.087	0.968	0.676	0.005	0.000	0.009	0.000	0.000						
Guide	0.004	-0.051	-0.071	0.075	0.144	-0.037	0.327	0.035	0.250	1.000				
	0.965	0.550	0.403	0.377	0.089	0.662	0.000	0.677	0.003					
Ideas	0.117	0.096	0.249	0.327	0.091	0.061	0.020	0.363	0.287	-0.076	1.000			
	0.034	0.256	0.003	0.000	0.279	0.469	0.814	0.000	0.001	0.371				
Plan	0.156	0.093	0.145	0.209	0.280	-0.028	0.187	0.176	0.198	0.252	0.027	1.000		
	0.063	0.276	0.087	0.013	0.001	0.738	0.026	0.036	0.018	0.003	0.746			
Freedom	-0.012	-0.078	0.051	0.066	-0.051	0.391	0.040	0.151	-0.052	-0.057	0.100	-0.076	1.000	
	0.890	0.361	0.545	0.437	0.547	0.000	0.633	0.071	0.538	0.505	0.236	0.371		
Read	-0.067	-0.136	0.001	0.112	0.229	-0.035	0.258	0.228	0.349	0.115	0.194	0.093	0.262	1.000
	0.432	0.110	0.988	0.186	0.006	0.678	0.002	0.006	0.000	0.175	0.021	0.273	0.002	
Talk	0.108	0.113	0.374	0.056	-0.006	0.117	0.108	-0.088	-0.154	0.153	-0.057	0.144	0.044	-0.058
	0.200	0.185	0.000	0.510	0.947	0.169	0.203	0.297	0.069	0.072	0.505	0.089	0.605	0.493

Table presents Pearson's correlation coefficients (r) and p-values.
Source: Gilbert et al. (2008)

Job Description

Subjects were asked to provide responses regarding their job descriptions. Table 31 summarizes the responses by subject group.

Table 31. Job Description Characteristic Occurrence Frequencies

Subject Group	Have a Job Desc?		Accurate Job Desc? (Rate 6, 7)		Job Desc. Used?		Job Desc ID person-job fit gaps?		Task Priorities in Job Desc?		Task Time Est. in Job Desc?		Do You & Supv Review Job Desc Periodically?	
	#	Y%	#	Y%	#	Y%	#	Y%	#	Y%	#	Y%	#	Y%
Lean Leader	88	72	65	43	63	44	29	55	29	45	29	35	29	55
Youth Leader	138	82	111	41	112	53	59	53	58	24	59	19	59	73

Y%: Percentage of Yes responses.

A minority of the respondents reported yes to the question: *Do you or your supervisor use your job description?* Thirty-two percent of the lean leaders and 43 percent of the youth leaders reported that they both have a job description and that it is used. A significant positive effect of job description use in terms of both job satisfaction and intent to quit is reported in Table 32. Table 32 also confirms the significant effect of job description review on both job satisfaction and person-job fit.

Table 32. Job Description Use Outcome Effects

Question	Values = Yes responses – No responses		
	Job Satisfaction	Intent to Quit	Person-Job Fit
Do you or your Supervisor use your job description?	0.363* p = 0.012	-0.555* p = 0.044	0.252 p = 0.090
Have you or your supervisor identified gaps between your job requirements and your knowledge, skills and abilities?	0.065 p = 0.733	-0.581 p = 0.118	0.111 p = 0.604
Are you assigned tasks prioritized by importance within your job description?	0.153 p = 0.414	0.506 p = 0.188	0.240 p = 0.218
Do you have an expected amount of time that you should allocate to each task included in your job description?	-0.035 p = 0.857	0.376 p = 0.360	0.073 p = 0.736
Do you or your supervisor review your job description periodically?	0.431* p = 0.049	-0.689 p = 0.085	0.594* p = 0.014

Statistic: T-Test with Non-pooled standard deviations
Values = Mean "Yes" Responses – Mean "No" Responses and p-values
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05
Outcomes measured on 7-point scale

There was a significant positive difference in levels of job satisfaction and person-job fit for those responders who periodically reviewed their job description with their supervisor

when compared to those who did not. Table 33 confirms similar significant differences for job satisfaction using the Kruskal-Wallis non-parametric test for equal medians.

Table 33. Job Description Use Outcome Effects

Question	Values = Yes responses – No responses		
	Job Satisfaction	Intent to Quit	Person-Job Fit
Do you or your Supervisor use your job description?	0.5** p = 0.005	-1.0 p = 0.07	0.125 p = 0.100
Have you or your supervisor identified gaps between your job requirements and your knowledge, skills and abilities?	0.5 p = 0.844	-0.5 p = 0.359	0 p = 0.903
Are you assigned tasks prioritized by importance within your job description?	0 p = 0.661	0.5 p = 0.098	0.188 p = 0.356
Do you have an expected amount of time that you should allocate to each task included in your job description?	-0.5 p = 0.454	1.0 p = 0.360	0.125 p = 0.974
Do you or your supervisor review your job description periodically?	0.5* p = 0.048	-1.0 p = 0.067	0.5* p = 0.015

Statistic: Kruskal-Wallis Median Test
Values = Median "Yes" Responses – Median "No" Responses and p-values
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05
Outcomes measured on 7-point scale

Over half of lean and youth leaders who use their job description reported that they and their supervisor identified gaps between their job requirements and their knowledge, skills and abilities. Lean leaders were more likely than youth leaders to have tasks prioritized by importance and to have the expected amount of time that they should allocate to each task included in their job description.

Responders with a job that was customized were asked if their job description was changed to better fit their knowledge, skills, abilities or characteristics (KSAC). Table 34 summarizes the data for the follow up question: *Was your current job description modified to reflect any of the following*?

Table 34. KSAC Dimension Driving Job Description Changes

Job Desc. Changed to Reflect?	Number Responders	Experience	Education	Skills	Personality	Knowledge	Preference	Career Goals	Coworker Job Desc.
Lean Leader	37	29.7%	29.7%	35.1%	10.8%	40.5%	8.1%	13.5%	0%
Youth Leader	76	39.5%	22.4%	40.8%	27.6%	38.2%	28.9%	9.2%	10.5%

Customized Job Description Expected Value

Kano style functional and dysfunctional questions were asked to identify the expected effect of both the presence and absence of a job description that was customized for the incumbent. The following two questions were asked:

> Functional Question: *How would you feel if your current job description was customized to better match your knowledge, skills, attributes and characteristics*?
>
> Dysfunctional Question: *How would you feel if your current job description is a listing of job responsibilities common to most (youth or lean depending on survey) leaders*?

Table 35 summarizes the response classification coding logic. Table 36 summarizes the results from the Kano assessment.

Table 35. Kano Responder Satisfaction Coding

Question Responses		Dysfunctional Question				
		Like it that way	Should be that way	Neutral	Live with it that way	Dislike it that way
Functional	Like	Q	R	D	D	O
	Should be	R	Q	D	D	M
	Neutral	I	-D	I	I	M
	Live with	I	-D	I	I	M
	Dislike	O	MNB	I	I	Q

D: Delighter, I: Indifferent, M: Must-Be, O: One-Dimensional, Q: Questionable Result
R: Reverse, MNB: Must not Be

Table 36. Customized Job Description – Kano Results

Kano Result	% LL	LL Count	% YL	YL Count	LL & YL	LL &YL Count
Must-Be	8.5%	12	9.8%	15	9.2%	27
Delighter	31.0%	44	41.2%	63	36.3%	107
One-Dimensional	7.0%	10	13.7%	21	10.5%	31
Indifferent	13.4%	19	17.6%	27	15.6%	46
Questionable Result	17.6%	25	2.0%	3	9.5%	28
Delighter Opposite	2.1%	3	5.9%	9	4.1%	12
Reverse	20.4%	29	9.8%	15	14.9%	44

Conclusion – Customized Job Description

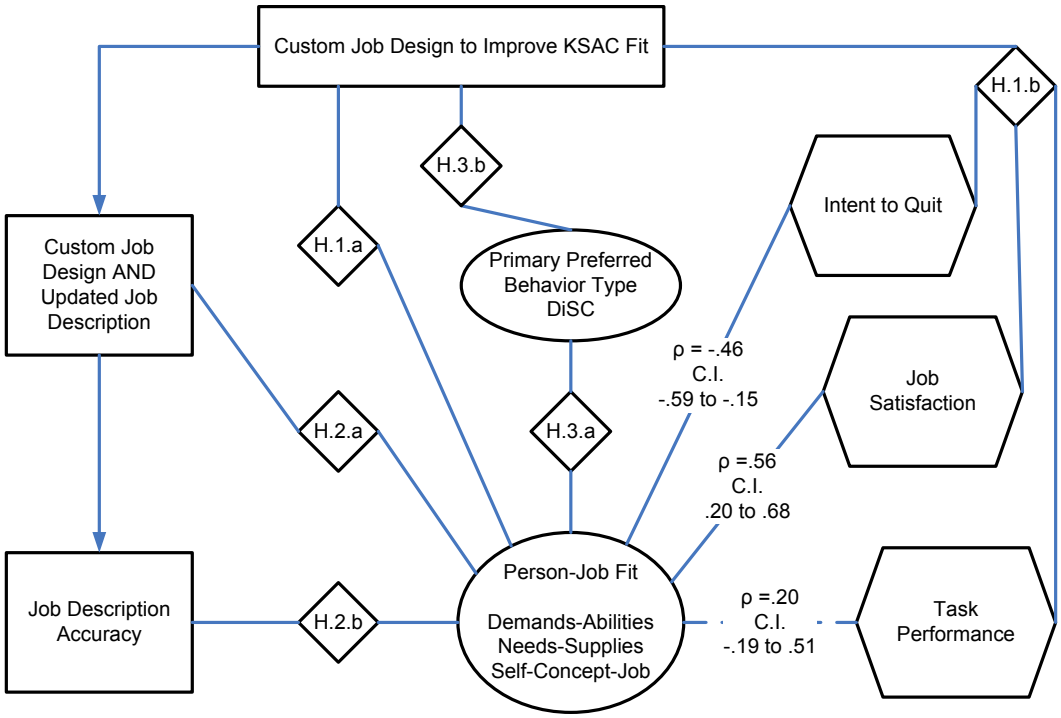
Both lean leaders and youth leaders view the customization of a job description to better match their knowledge, skills, abilities and characteristics as a *Delighter*. Forty-one percent of youth leaders and 31 percent of lean leader respondents reported that they would have satisfied feelings if they have a customized job description; however, if the job description was not customized they would not have a feeling of dissatisfaction. The *One-Dimensional* result indicates satisfaction with the customized job description and dissatisfaction if it is not present. The *Must-Be* classification indicates that the percentage of respondents who expect the customization and will be dissatisfied if it is not present. Nineteen percent of the respondents delivered replies that were interpreted to prefer not having a customized job description as indicated in the *Delighter-Opposite* and *Reverse* categories.

Objectives and Hypotheses

This study had four objectives. First, assess the value of knowledge worker job customization by designing a measure and comparing the correlation to measures of

person-job fit and outcome measures of job satisfaction, task performance and intent to quit. Second, assess the value of an accurate and customized job description or unique position description. Third, assess the effect of preferred behavior styles on both person-job fit and the frequency of job customization. Fourth, develop person-task assignment indexes or a tool to objectively compare the expected task performance for potential person-task combination alternatives.

Figure 16 illustrates the relationships that were tested with the first three hypotheses. The correlation coefficients are found in Tables 38 and 39 on page 161.



Source: Correlation coefficients from Kristof-Brown (2005a) Person-Job Fit Meta-Analysis
ρ = Estimated true score correlation

Figure 16. Hypotheses Relationships

Objective 1a - Customized Job Design and Person-Job Fit

Assess the value of the redesign of a knowledge worker's job to better fit the job incumbent's knowledge, skill, abilities and characteristics (KSAC) in terms of person-job fit. This hypothesis was expected to confirm a positive correlation between knowledge worker self-reported degree of job customization and outcomes of self-reported person-job fit as measured by demands-abilities fit, needs-supplies fit and self-concept-job fit.

1a Null Hypothesis

There will be no significant difference in self-reported person-job fit (demands-abilities fit, needs-supplies fit and self-concept-job fit) between knowledge workers who have customized jobs and those who do not.

Results

The null hypothesis was rejected. The hypothesis was supported. The evidence supports a significant positive correlation between the measures of job customization and person-job fit. Table 37 summarizes the regression results.

Table 37. Regression Job Customization and Person-Job Fit Measures

Independent Var.: Person-Job Fit Measures	Regression Coefficients				R^2	P value ($\alpha = .05$)	F Value
	Least Square		Rank Order				
	B_0	B_1	B_0	B_1	Least Square		
Person-Job	4.61	0.193	4.81	0.167	12.3%	0.000***	27.98
Demand-Abilities	4.87	0.176	5.17	0.133	9.0%	0.000***	20.66
Need-Supplies	4.04	0.241	4.22	0.222	9.7%	0.000***	22.35
Self-Concept-Job	5.17	0.139	5.28	0.125	8.2%	0.000***	18.05

p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Table 38 presents the correlation matrix and Table 39 presents the non-parametric Rank Order Correlation. Tables 28 and 29 on page 152 confirmed a significant positive correlation between person-job fit and job customization for both the youth leaders and lean leader subject groups.

Table 38. Job Customization and Person-Job Fit Correlation Matrix

Measure	Custom Job	Demand-Abilities	Need-Supplies
Person-Job Fit	0.350 Med		
	0.000***		
Demand-Abilities	0.300 Med		
	0.000***		
Need-Supplies	0.312 Med	0.691 Hi	
	0.000***	0.000***	
Self-Concept-Job	0.286 Low	0.641 Hi	0.566 Hi
	0.000***	0.000***	0.000***

Note: DA, NS and SCJ fits are components of Person-Job fit
Table presents Pearson's correlation coefficients (r) and p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Table 39. Job Customization and Person-Job Fit Rank Order Correlation

Measure	Custom Job	Demand-Abilities	Need-Supplies
Person-Job Fit	0.312		
	0.000***		
Demand-Abilities	0.281		
	0.000***		
Need-Supplies	0.264	0.629	
	0.000***	0.000***	
Self-Concept-Job	0.257	0.564	0.538
	0.000***	0.000***	0.000***

Note: DA, NS and SCJ fits are components of Person-Job fit
Table presents Spearman's Rank Order Correlation Coefficients and Test of Concordance p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Objective 1b - Customized Job Design and Outcomes

Assess the value of the redesign of a knowledge worker's job to better fit the job incumbent's knowledge, skill, abilities and characteristics (KSAC) in terms of job outcomes. This hypothesis was expected to confirm a positive correlation between knowledge worker self-reported degree of job customization and outcomes of self-reported job satisfaction and task performance. A negative correlation was expected between job customization and intent to quit.

1b Null Hypothesis

There will be no significant difference in self-reported job satisfaction, task performance or intent to quit between knowledge workers who have customized jobs and those who do not.

Results

The null hypothesis was rejected for job satisfaction and intent to quit. The hypothesis was supported for job satisfaction and intent to quit. The hypothesis was rejected for the task performance. The evidence supports a positive difference between the job customization measure and the outcomes of job satisfaction and intent to quit.

There was not enough evidence to reject the hypotheses for average task performance. Task performance was measured as an average of the one to three tasks that each respondent self-assessed. Tables 29 on page 152 confirmed a significant positive correlation between job customization and the measures of job satisfaction,

intent to quit and task performance for youth leaders. Therefore, the youth leader performance for the selected tasks was significantly correlated with the outcomes. However, Table 28 on page 152 presents a low insignificant correlation between job customization and task performance for lean leaders.

The correlation coefficients for lean leader job customization and the outcome variables of job satisfaction and intent to quit would have significant p-values less than 0.05 if their sample size quantities were 89 for job satisfaction and 113 for intent to quit. The actual sample sizes were 80 for job satisfaction and 79 for intent to quit.

Table 40 summarizes the regression results, Table 41 presents the correlation matrix, and Table 42 presents the non-parametric Rank Order Correlation. Table 28 on page 152 reported significant positive correlations between job customization and the outcome measures of job satisfaction and intent to quit. Table 29 on page 152 reported significant correlations between job customization and the measures of job satisfaction and intent to quit for lean leaders; however, increasing the sample size by 34 would have resulted in a significant correlation between job customization and intent to quit. Increasing the sample size by nine would have resulted in a significant correlation for job satisfaction too.

Table 40. Regression: Job Customization and Outcome Measures

Dependent Variable Outcome Measures	Regression Coefficients				R^2	P value	F Value
	Least Square		Rank Order				
	B_0	B_1	B_0	B_1	Least Square		
Task Performance	5.45	0.044	5.75	0.000	0.8%	0.294	1.11
Job Satisfaction	5.32	0.134	5.58	0.100	5.7%	0.000***	12.53
Intent to quit	4.00	(0.199)	3.75	(0.167)	3.4%	0.008**	7.19

p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Table 41. Custom Job and Outcome Criterion Correlation Matrix

Measure	Custom Job	Task Perf. Avg.	Job Sat.
Task Performance	0.088		
	0.294		
Job Satisfaction	0.238	0.092	
	0.000***	0.266	
Intent to Quit	-0.184	-0.044	-0.664
	0.008**	0.604	0.000***

Table presents Pearson's correlation coefficients (r) and p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Table 42. Custom Job and Outcome Criterion Rank Order Correlation Matrix

Measure	Custom Job	Task Perf. Avg.	Job Sat.
Task Performance	0.081		
	0.176		
Job Satisfaction	0.197	0.167	
	0.002**	0.018*	
Intent to Quit	-0.145	-0.073	-0.650
	0.014*	0.787	0.000***

Table presents Spearman's Rank Order Correlation Coefficients and Test of Concordance p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Objective 2a - Customized Job Description

Assess the value of a knowledge worker's job description that is updated to reflect a job that was redesigned or customized to better fit the job incumbent KSACs. This hypothesis was expected to confirm improved levels of self-reported job satisfaction, task performance and intent to quit for knowledge workers who have both customized jobs and job descriptions updated to reflect the changes when compared to knowledge workers who indicate customized jobs but not updated job descriptions or position descriptions documenting the redesign.

2a Null Hypothesis

There will be no significant difference in self-reported person-job fit for knowledge workers with customized jobs who have customized job descriptions and those who do not have customized job descriptions.

Results

The null hypothesis was rejected. The hypothesis was supported. Table 43 reports the differences for both overall person-job fit and the sub-component measure of needs-supplies fit. Needs-supplies fit measures the fit between what the incumbent needs and what the job supplies. The non-parametric Kruskal-Wallis median difference test confirmed the same significant differences. Appendix P reports Kruskal-Wallis non-parametric median difference tests, variance comparisons and 2 T-Test results.

Table 43. Documenting Custom Job Design – Person-Job Fit Effect

Description	Customized Job Design with …		SE Mean	mu(1) – mu(2)	95% C. Limits		P - value
	Updated Job Description	Non-updated Job Description			Lower	Upper	
Person-Job Fit Sample Size *n*	50	60					
Person-Job Fit Average	5.90	5.55	0.091	0.35	0.08	0.62	.013
Needs-Supplies Fit Sample Size *n*	52	61					
Needs-Supplies Fit Average	5.77	5.20	0.10	0.57	0.20	0.93	.003

Objective 2b - Accurate Job Description

Assess the value of an accurate job description. This hypothesis was expected to confirm that the degree of job description accuracy will not significantly correlate with outcomes of self-reported person-job fit, job satisfaction, task performance or intent to quit. Job redesign and subsequent job description updates rather than job description accuracy were expected to affect the outcomes.

2b Null Hypothesis

There will be no significant difference in self-reported person-job fit, job satisfaction, task effectiveness or intent to quit between knowledge workers who have accurate job descriptions and those who do not.

Results

The null hypothesis was rejected for the outcomes of person-job fit, job satisfaction and intent to quit; however, there was no significant difference for task effectiveness. The hypothesis was supported for person-job fit, job satisfaction and intent to quit. Table 44 presents the job description accuracy and outcome criterion rank order correlation matrix that confirms the significant outcome correlations. Table 45 presents the regression results for predicting outcomes with the job description accuracy measure.

Table 44. Job Description Accuracy and Outcome Criterion Rank Order Correlation

Measure	Job Description Accuracy
Person-Job Fit	0.422***
	0.000
Task Performance	0.059
	0.739
Job Satisfaction	0.361***
	0.000
Intent to Quit	-0.183
	0.009**

Table presents Spearman's Rank Order Correlation Coefficients and Test of Concordance p-values.
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Table 45. Regression: Job Description Accuracy and Outcome Variables

Independent Var.: Person-Job Fit Measures	Regression Coefficients				R^2	p-value ($\alpha = .05$)	F Value
	Least Square		Rank Order				
	B_0	B_1	B_0	B_1	Least Square		
Person-Job Fit	4.0	0.300	4.2	0.285	19.5%	0.000***	39.64
Task Performance	5.4	0.059	5.8	0.000	1.2%	.251	1.33
Job Satisfaction	4.7	0.242	5.1	0.200	13.0%	0.000***	25.71
Intent to Quit	4.6	-0.306	4.3	-0.250	5.5%	0.002**	9.80

p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

Objective 3a - Preferred Behavior and Person-Job Fit

Assess the differences between knowledge worker self-reported levels of person-job fit for each of four primary preferred behavior types. The four different preferred behavior types are characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Significant differences were expected.

3a Null Hypothesis

There will be no significant difference in self-reported person-job fit for knowledge workers who have different primary preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Self-reported preferred

behavior types were expected to have a significant effect on person-job fit.

Results

The null hypothesis was rejected. The hypothesis was supported. Persons labeled *C* or *Conscientious* indicated that they are moderate-paced, thoughtful, calm with softer speech, questioning, results focused and direct were. *Conscientious* responders indicated lower levels of person-job fit as summarized in Table 46. Of the three sub-categories that constitute person-job fit the needs-supplies category reported the sole significant difference between preferred behavior types. The conclusion may be drawn that those who prefer conscientious behavior report that their needs are not met by their job design.

Table 46. Person-Job Fit by Preferred Behavior Type

Preferred Behavior Type	Sample Size	Mean	SE Mean
D: Dominance	37	5.574	0.146
I: Influence	54	5.685	0.923
S: Steadiness	54	5.590	0.120
C: Conscientious	53	5.144	0.133

As summarized in Table 47 the lean leader group reported a significantly higher frequency of reported preference for *Conscientious* behavior. Also, as reported in Table 16 on page 142 youth leaders reported significantly higher needs-supplies fit than lean leaders.

Appendix Q reports the Kruskal-Wallis Test for median differences between preferred behavior types and measures of person-job fit. Those responders who were characterized as a *Conscientious* had significantly lower levels of need-supplies job fit with a p-value of 0.002 than for each of the other three preferred behavior types. The

median levels of needs-supplies fit on a seven-point scale were: 5.50 for *Dominance*, 5.67 for *Influence*, 5.50 for *Steadiness*, and 5.00 for *Conscientiousness*.

Table 47. Preferred Behavior Type by Subject Group

Preferred Behavior Type	# Lean Leaders	% Lean Leader	# Youth Leaders	% Youth Leaders
D: Dominance	23	28.0%	19	14.8%
I: Influence	10	12.2%	48	37.5%
S: Steadiness	13	15.9%	43	33.6%
C: Conscientious	36	43.9%	18	14.1%
Total	82	100%	128	100%

Objective 3b - Preferred Behavior and Job Customization

Assess the differences between frequencies of job customization for knowledge workers who have primary preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*. Significant differences are expected.

3b Null Hypothesis

There will be no significant difference in the frequency of job customization for knowledge workers who have primary preferred behavior types characterized as either: *Dominance*, *Influence*, *Steadiness* or *Conscientiousness*.

Results

The null hypothesis was accepted. The hypothesis was rejected. A summary of the data is presented in Table 48. The job customization measure is not normally distributed so the Two-Sample T-Test may not be applied; however, the T-Test did indicate a significant difference between the preferred behaviors of *Dominance* and

Influence at the 95 percent confidence level with a p-value of 0.009. The Kruskal-Wallis equal median test and Two-Sample T-Test results can be found in Appendix R. The equal median test indicated a non significant difference between the mediums of *Dominance* and *Influence* with a p-value of 0.058.

Table 48. Job Customization Level Reported by Preferred Behavior Type

Preferred Behavior Type	Sample Size	Mean	Median	SE Mean
D: Dominance	40	4.050	4.0	0.238
I: Influence	57	4.886	5.0	0.203
S: Steadiness	56	4.500	5.0	0.223
C: Conscientious	54	4.602	5.0	0.225

Objective 4 - Assignment Priority Index

Test the process for developing a task assignment priority index that incorporates person and job characteristics that affect person-job fit in terms of demands-abilities, needs-supplies and self-concept-job fit. Assess the importance of 24 factors identified in the literature review for predicting person-job fit. Study the effect of reducing the number of factors on the power to predict task performance. Calculate factor coefficients for the person-task Assignment Priority Index (API) multivariate equation. The API predicts the expected task performance as reported by the two lean leader and youth leader subject groups as collected in the fall of 2009.

Overall task performance was measured as the average rating for the one to three tasks assessed by each respondent. Respondents were requested to select one of the three tasks offered for each of the routine, problem solving and project task types that had the greatest impact on their job outcomes. Task performance for each task was measured by

asking the respondent to rate the statement, *I believe that I perform the SELECTED TASK NAME task well,* on a scale from 1-strongly disagree to 7-strongly agree.

Twenty-four initial independent person-task fit variables were measured. There were three steps to the variable reduction process used to reduce the number of variables. The resulting independent variables used to predict overall task performance were both significantly correlated with measured task performance and helped explain the task performance variation by task type. Table 49 summarizes the 3-step data reduction steps.

Table 49. Predictive Multiple Regression Independent Variable Reduction Method

Step #	Reduction Step	Results
1	Non-significant correlations with task performance.	Eliminated 10 variables.
2	High bivariate correlations > 0.70.	Eliminated training and either knowledge or skill from each task type model.
3	Iterative Process: Highest p-value and small contribution to R^2.	Eliminated 3 variables and reduced the number of significant predictive variables by task type.

Table 50 records the independent variable correlations with task performance for each of the three task types of problem solving, project and routine. The table also indicates those variables that were eliminated from each of the three data reduction steps.

The second step eliminated variables with strong bivariate correlations. Tabachnick and Fidell (2001) recommend considering removal of variables with bivariate correlations greater than 0.70. High bivariate correlations between skill, knowledge and training resulted in the elimination of the level of training variable. High correlations (e.g.: $r = 0.840$ for routine tasks) between knowledge and skill caused the elimination of either the task or skill independent variable from each task type predictor equations. Two predictor variables were eliminated from step two.

Table 50. Task Performance and Independent Variable Correlation Matrix

Independent Variable \ Task Type	Y_1: Problem Solving	Y_2: Project	Y_3: Routine	$Y_{1+}Y_{2+}Y_3$	Step # Reduced
Promo: Promotable to higher levels of org	-.007	-.031	-.023	0.069	1
TaskLess: Desire to perform task type less	.171*	-.012	.124	0.141**	3
TaskKnow: Knowledge to perform task	.665***	**.548*** **	.560***	**0.624*** **	**(2)**
TaskSkill: Skills to perform tasks	**.697*** **	.516***	**.630*** **	**0.603*** **	**(2)**
TaskAbility: Abilities to perform task	**.521*** **	**.353*** **	**.477*** **	**0.441*** **	
TaskTrain: Fully trained	.574***	.442***	.504***	0.497***	2
Grade: Task matches job grade or level	-.011	.014	.009	0.006	1
Career: Career Plan Fit with Task	**.408*** **	.267**	.251**	**0.3*** **	
MatDiSC: Preferred behavior type task fit	**.166***	**.137**	**.219***	**0.166****	
Preferences:					
Things: Working with things	-.140	.053	.097	0.012	1
Numbers: Working with numbers	.034	.079	.059	0.059	1
Study: Studying and using info.	-.075	.004	-.020	-0.028	1
TakeCharge: Taking responsibility	.007	**.309*** **	**.124**	**0.153****	
HelpOthers: Caring, helping & coaching	.173*	.130	.164	0.153**	3
Independent: Working independently	-.056	-.033	-.135	-0.076	1
GetAlong: Getting along with others	.083	.177*	-.077	0.059	3
Positive: Know task positive value to org.	.127	**.229****	.056	**0.134****	
Team: Be integral part of a team	**.197***	.195*	**.130**	**0.171*** **	
Guide: Tasks with guidance is given	.001	-.038	.092	0.019	1
Ideas: Thinking in ideas & possibilities	**.187***	.302***	.132	**0.207*** **	
Plan: Organization & planning ahead	.077	**.258****	**.285****	**0.213*** **	
Freedom: Choose when & how to perform	-.044	.074	-.101	-0.022	1
Talk: Prefer open conversation	.067	.155	-.059	0.054	1
Read: Prefer written & visual information	-.055	-.014	-.052	-0.039	1

Table presents Pearson's correlation coefficients (r)
Bold font: Indicates API person-task performance predictive independent variables
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05
(2): Knowledge and Skill were highly correlated so only the highest correlated variable is included.

The multiple regression method was applied in the third step to develop a best fit linear equation for predicting task performance for each task type. The total number of predictive variables for each task type must be ten or less given the sample size by task type; however, minimizing the number of measures without losing predictive value improves the resulting tool's ease-of-use. Measures were eliminated iteratively by selecting the variable with the highest p-value and low beta coefficient. Those variables with negative coefficients, due to over fitting, were eliminated during this process. The following three variables were eliminated from all three task type equations: 1)

Preference for caring for helping or coaching others, 2) *Preference for getting along with others and* 3) *Desire to perform the task type less*. Step 3 of the data reduction process reduced R^2 values by 0.9 for each task type. Appendix Z presents the multiple regression data from the beginning and end of the third step of the data reduction process. The reduction process for each task type was complete when an incremental variable reduction created a (0.20 to 1.0) reduction in R^2 values as reported in Appendix Z.

Fifteen independent variables were eliminated from the task performance prediction model. Table 51 summarizes the variables that were eliminated from the model.

Table 51. Independent Variables Eliminated from Model

Variable	Question & Scale
Freedom	*I prefer tasks that allow personal freedom to choose when and how to perform.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Get Along	*I prefer tasks that allow me to be well liked and get along with others.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Guidance	*I prefer tasks where guidance is given to clarify task expectations and the tasks have helpful training and specific instructions.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Help Others	*I prefer tasks that require caring for, coaching, or helping others.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Independence	I prefer tasks that require working independently and making my own decisions." Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Job Grade	*The task requires more capability and effort than what should be expected form my current job level.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Numbers	*I prefer tasks that require working with numbers, analyzing numbers and keeping data records.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Performance Overall	*I believe that I perform the SELECTED TASK well.* Average of 1 to 3 ratings. Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Promotion	*Which level of job demands do you feel capable of performing?* 1 = current job level demands, 2=next level of more demanding jobs, 3= Organization's top level jobs
Reading	*I prefer tasks that require reading from written materials, computers or other visual sources of information.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Studying	*I prefer tasks that require studying information, retaining it and using it.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Talking	*I prefer tasks that require learning through open conversation and explanations.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Things	*I prefer tasks that require working with, studying about, building or repairing things.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Training	*I am fully trained to perform the task well.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
Type Task Frequency	*Would you like to allocate more or less of your work time to this TASK TYPE of task similar to the three listed?* Scale: 1= more, 2= same, 3= less

There were ten significant independent variables included in the model. The definition and measurement scale for each predictive variable included in the model are

recorded in Table 52. The correlation matrices for all ten variables by task type are displayed in Appendix X.

Table 52. Person-Task Assignment Tool Independent Predictor Variable Definitions

Variable	Question & Scale
AB: Task Ability	*I have the abilities or general capability to perform the task well. I have the necessary physical, mental, financial and positional power.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
CP: Task Career Plan Fit	*The task fits my career plan well.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
ID: Ideas	*I prefer tasks that require thinking in terms of ideas and possibilities. They might require working with concepts or theories, idea generation, creative thinking or research.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
KN: Task Knowledge	*I have the knowledge, identifiable factual information, familiarity, awareness, or understanding gained through experience or study necessary to perform the task well.* Scale: 1 Strongly Disagree to 7 Strongly Agree
PB: Preferred Behavior	Binary: 1 = Persons preferred behavior type matches that necessary to perform the job well. 0 = behavior type does not match.
PL: Plan	*I prefer tasks that require organization with daily events planned ahead.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
PV: Positive Value	*I prefer tasks where results are known and the positive value to the organization is understood.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
SK: Task Skill	*I have the skills, ease of movement and the dexterity acquired or developed through training or experience that is necessary to perform the task well.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
TC: Take Charge	*I prefer tasks that require taking responsibility for others work and taking charge.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree
TE: Team	*I prefer tasks that require being an effective and integral part of a team.* Scale: 1 = Strongly Disagree to 7 = Strongly Agree

The Assignment Priority Index (API) model is found in Equation 2. Equation 3 contains the parameters and coefficients summarized in Table 53.

Equation 2. Assignment Priority Index Model

$$API = (\text{Problem Solve Task \%}) * (\beta_{0+\sum}(\beta_n * \text{ratings})) + (\text{Project Task \%}) * (\beta_{0+\sum}(\beta_n * \text{ratings})) + (\text{Routine Task \%}) * (\beta_{0+\sum}(\beta_n * \text{ratings}))$$

Equation 3. Assignment Priority Index Tested

API = (PS%) * (0.751 + 0.182*AB + 0.107*CP + 0.045*ID + 0.237*PB + 0.458*SK + 0.056*TE)

+ (PR%) * (0.033 + 0.109*AB + 0.550*KN + 0.350*PB+ 0.121*PL + 0.115*PV + 0.095*TC)

+ (RT%) * (0.359 + 0.132*AB + 0.430*PB + 0.080*PL + 0.595*SK + 0.054*TC + 0.039*TE)

The API multivariate equation predicts the levels of task performance reported by the lean leader and youth leader subject groups in 2009. Table 52 reports the coefficients for the predictive independent variables of the person-task assignment priority index that were generated from the regression exercises.

Table 53. Person-Task Performance Multivariate Equation Coefficients

Predictive Independent Variables & Constant	Y_1: Problem Solving Task Performance		Y_2: Project Task Performance		Y_3: Routine Task Performance	
R^2 Actual	R^2: 55.2		R^2: 42.0		R^2: 46.0	
P-value & F-value	P=0.000	F: 26.5	P=0.000	F: 14.9	P=0.000	F: 17.6
β_n: Coefficient r: Correlation Coeff.	β_n	r	β_n	r	β_n	r
Constant β_0	0.751		0.033		0.359	
AB: Task Ability	0.182	0.52***	0.109	0.35***	0.132	0.48***
CP: Task Career Plan Fit	0.107	0.41***				
ID: Prefer Ideas	0.045	0.19*				
KN: Task Knowledge			0.55	0.55***		
PB: Preferred Behavior Match	0.237	0.17*	0.35	0.14	0.43	0.22*
PL: Prefer Plan			0.121	0.26**	0.08	0.29*
PV: Prefer Know Positive Value			0.115	0.23**		
SK: Task Skill	0.458	0.70***			0.595	0.63***
TC: Prefer Take Charge			0.095	0.31***	0.054	0.12
TE: Prefer Teams	0.056	0.20*			0.039	0.13

r = Pearson correlation coefficient with task performance (Source: Table 48)
R^2 : Correlation Coefficient - model fit to data
β_n = Independent Predictor Variable Coefficient
p-value significance indicators: *** 0.000, ** < 0.01, * < 0.05

The index application requires confirming both the task type occurrence percentage and the application to a similar knowledge worker group with a variety of non-routine tasks. The correlation coefficients are those reported in Table 49 on page 171. Assignment Priority Index values for extreme and average predictive factor ratings are summarized in Table 54.

Table 54. Assignment Priority Index Values for Extreme and Average Ratings

Ratings Applied to all Ten Predictive Factors	Task Split by Task Type			
	Problem Solving 100%	Project 100%	Routine 100%	Equal Ratings 33.3%
1	1.60	1.02	1.26	1.29
4	4.26	4.17	4.17	4.20
7	6.92	7.31	7.09	7.11

Predicted values that are greater than the maximum rating value for the predictive factor may not make sense to the task assignment tool applicator. The expected full range of tool prediction values will range from 1.02 to 7.31.

All Pearson correlation coefficients were significant with p-values less than 0.05 when all three task types were combined. Equation 4 presents the API equation with the three variables omitted that did not significantly correlate with task performance for all task types. The R^2 values for the project task were reduced from 42.0 for Equation 3 to 41.0 for Equation 4 and the R^2 values for the routine task were reduced from 46.0 for Equation 3 to 45.3 for Equation 4.

Equation 4. Assignment Priority Index (PR-PB, RT-TC, RT-TE Removed)

$$API = (PS\%) * (0.751 + 0.182*AB + 0.107*CP + 0.045*ID + 0.237*PB + 0.458*SK + 0.056*TE) + (PR\%) * (-0.0234 + 0.131*AB + 0.537*KN + 0.117*PL + 0.116*PV + 0.107*TC) + (RT\%) * (0.744 + 0.124*AB + 0.419*PB + 0.097*PL + 0.610*SK)$$

The task performance predictors were incorporated into a task assignment tool that was designed to assess the expected performance for one task and two assignment candidates. The tool was designed using Microsoft's Excel spreadsheet using Visual Basic to program data collection forms and to report results. Excel was chosen due to the ease of programming and the widespread application. The Excel spread sheet has four Excel *Worksheets*. Figure 17 contains a snapshot of the *Worksheet* where the predicted task performance results are presented. The second *Worksheet* summarizes the data entered by the decision maker(s). The third *Worksheet* presents a data sample for user reference. The fourth *Worksheet* is the flow chart presented in Figure 18 on page 186 that documents a task assignment decision process incorporating the task assignment decision making tool.

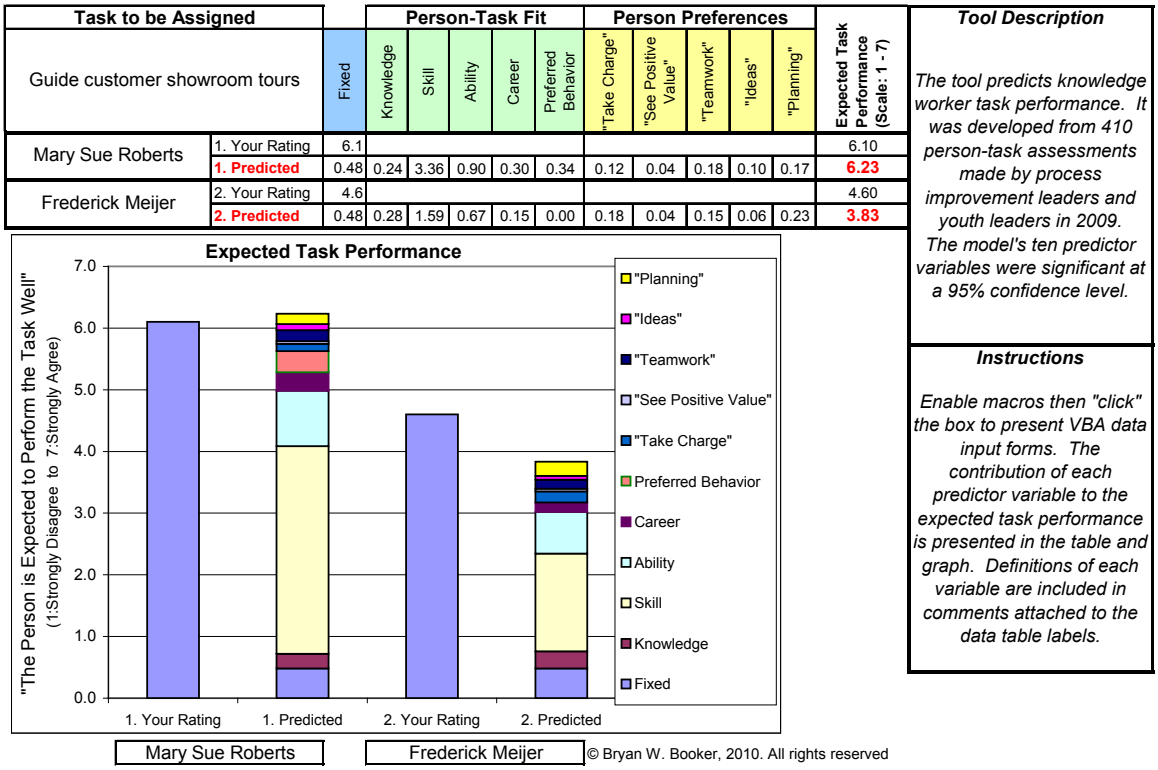


Figure 17. Task Assignment Tool – Expected Task Performance Report

Task Assignment Tool Feedback Survey

The Task Assignment Tool was evaluated by 31 subjects. Appendix U contains the feedback survey that was completed by knowledge workers or persons involved in the knowledge worker task assignment process. Five hypotheses were designed to test the expected value of the tool. The hypotheses were evaluated using the non-parametric *1-Sample Sign Test of Median* test for hypotheses evaluation. The hypotheses tested the probability that the actual response median was greater than the average rating of 4 on the 7-point response scale. The anonymous survey was administered electronically via a URL link. Participation was requested via e-mail. The participants were solicited from

the same populations that were asked to participate in the job customization data collection.

Task Assignment Tool Survey Results

Response rates were lower than 5 percent. Feedback from users indicated that the requirement to open the Excel Visual Basic macros was both a new task for some responders and may have been perceived as a potential computer security risk which reduced tool testing and survey responses. Table 55 summarizes the job responsibility descriptions that were collected from the respondents. Respondents were free to make multiple choices.

Table 55. Task Assignment Tool Reviewer Job Responsibilities

Job Responsibility	Quantity
Manager or Supervisor	18
"I make task assignments"	12
Process Improvement Leader	7
Lean Leader	6
Youth Leader	6
Engineer	5
Other	2

Table 56 summarizes the Task Assignment Tool assessment using the non-parametric 1-sample sign test of the median for median response being greater than four. The mean response was not used to evaluate the hypotheses but is included for a relative comparison between test results.

Table 56. Task Assignment Tool Assessment Results

Test	Quantity of Respondents				p-value	Median	Mean
	Samples	< 4	= 4	>4			
Solution Confidence	30	1	3	26	0.0000	5.5	5.43
Insight from Applying TAT	31	1	3	27	0.0000	6	5.61
TAT as Performance Predictor	31	1	4	26	0.0000	5	5.36
Recommend TAT	30	1	3	26	0.0000	5	5.57
Overall Satisfaction	31	1	1	29	0.0000	6	5.65

Non-parametric test: 1-sample sign test of the median > 4
Scale: 7-point

Solution Confidence

This first question assessed the degree of confidence that the responder had with the predicted task performance. Responders were asked to compare the TAT solution with their initial task performance estimates.

Survey Item

I feel more CONFIDENT with the Task Assignment Tool predicted task performance RATINGS than my initial task performance rating.

Null Hypothesis

There will be a non-significant level of confidence of a positive difference between the TAT solution and the responder's initial rating.

Results

The null hypothesis was rejected. The hypothesis that they were more confident with the Task Assignment Tool solution than their initial unaided assessment was supported.

Insight from Applying Task Assignment Tool

The second question assessed the degree of insight into the task assignment decision that responder's gained by applying the task assignment tool. The process, questions and results were expected to add additional insight into the assignment decision.

Survey Item

The Task Assignment Tool provided helpful INSIGHT regarding the task assignment decision.

Null Hypothesis

There will be a non-significant level of positive insight into the task assignment decision resulting from the TAT application.

Results

The null hypothesis was rejected. The hypothesis was supported for helpful insight provided by applying the Task Assignment Tool.

Task Assignment Tool as a PREDICTOR of Task Performance

The third question assessed the value of the Task Assignment Tool as a predictor of Task Performance. Responders were asked to compare this assignment method to the method that they normally would use.

Survey Item

The Task Assignment Tool is a better PREDICTOR of task performance than methods I normally use.

Null Hypothesis

There will be a non-significant positive predictive difference between application of TAT and previous method(s).

Results

The null hypothesis was rejected. The hypothesis that the Task Assignment Tool was a better predictor of task performance than the method the responder normally used was supported.

Recommend Task Assignment Tool

The fourth question assessed the respondent's willingness to recommend the application of the tool. The question was qualified to assume that a similar tool was adopted by their organization.

Survey Item

I would RECOMMEND using a knowledge worker task assignment tool as a decision making job aid if a similar tool was adopted by my organization.

Null Hypothesis

There will be a non-significant expectation that TAT application will be recommended to other applicators.

Results

The null hypothesis was rejected. The hypothesis that they would be willing to recommend the use of a Task Assignment Tool to others was supported.

Overall Satisfaction

The fifth question assessed the responder's overall satisfaction with the tool. The format of the question is similar to the overall job satisfaction question that served as the method for measuring job satisfaction.

Survey Item

Considering all aspects of this Task Assignment Tool, my overall SATISFACTION is ...

Null Hypothesis

There will be a non-significant overall positive satisfaction with TAT application.

Results

The null hypothesis was rejected. The hypothesis was supported for a positive overall satisfaction with the application of the Task Assignment Tool.

Recommended Changes

The ten verbatim recommended changes to the Task Assignment Tool are recorded in Appendix W. The recommended changes generally supported the tool application. Improvements suggested included: further explanation of the difference between skill and ability, better explanations or a tutorial, expansion to allow for more potential candidates, and a broader task assignment application.

Task Assignment Tool Assessment Summary

The tool was favorably received by the 31 evaluators. The recommended changes were clear and reasonable and are considered potential improvements to the existing tool.

Figure 18 contains the process flow of a management process that would include job customization, position description documentation and a task assignment process. The shaded nodes indicate the process steps where the Task Assignment Tool may be applied.

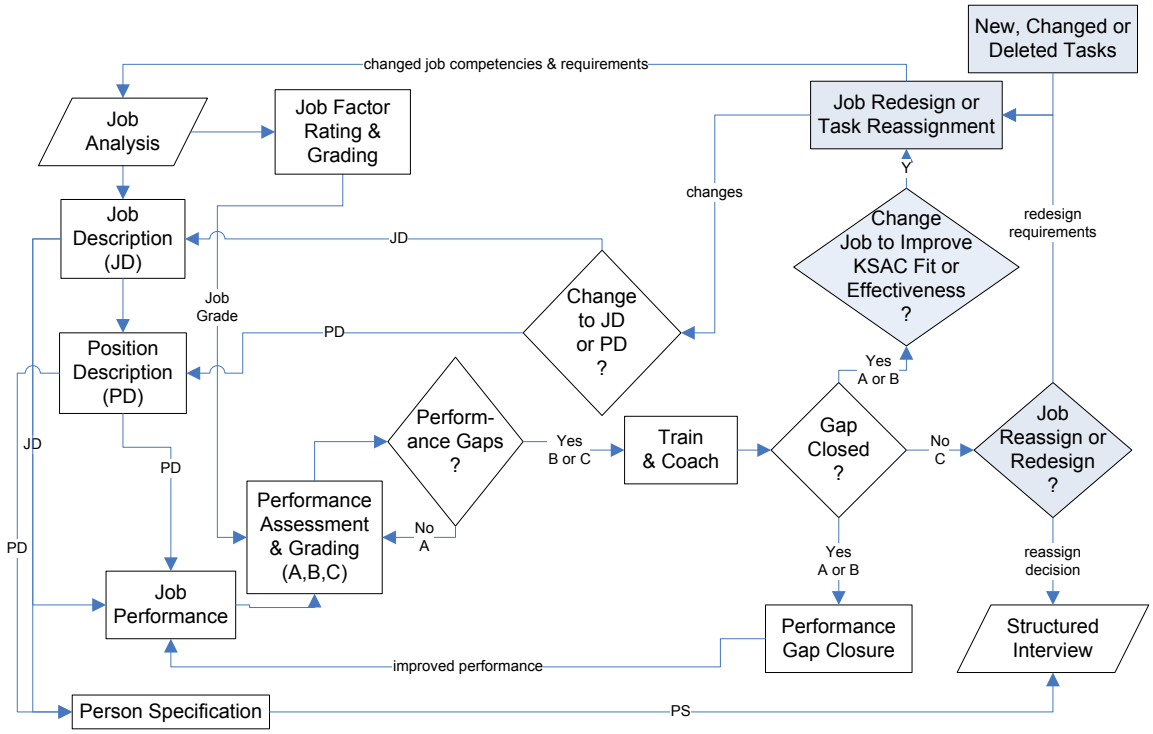


Figure 18. Job Customization Model

Figure 19 contains a proposed flow chart for a person-task assignment process that would include the use of a task-assignment team, task assignment priority indexes, and the documentation of a customized job design with a position description.

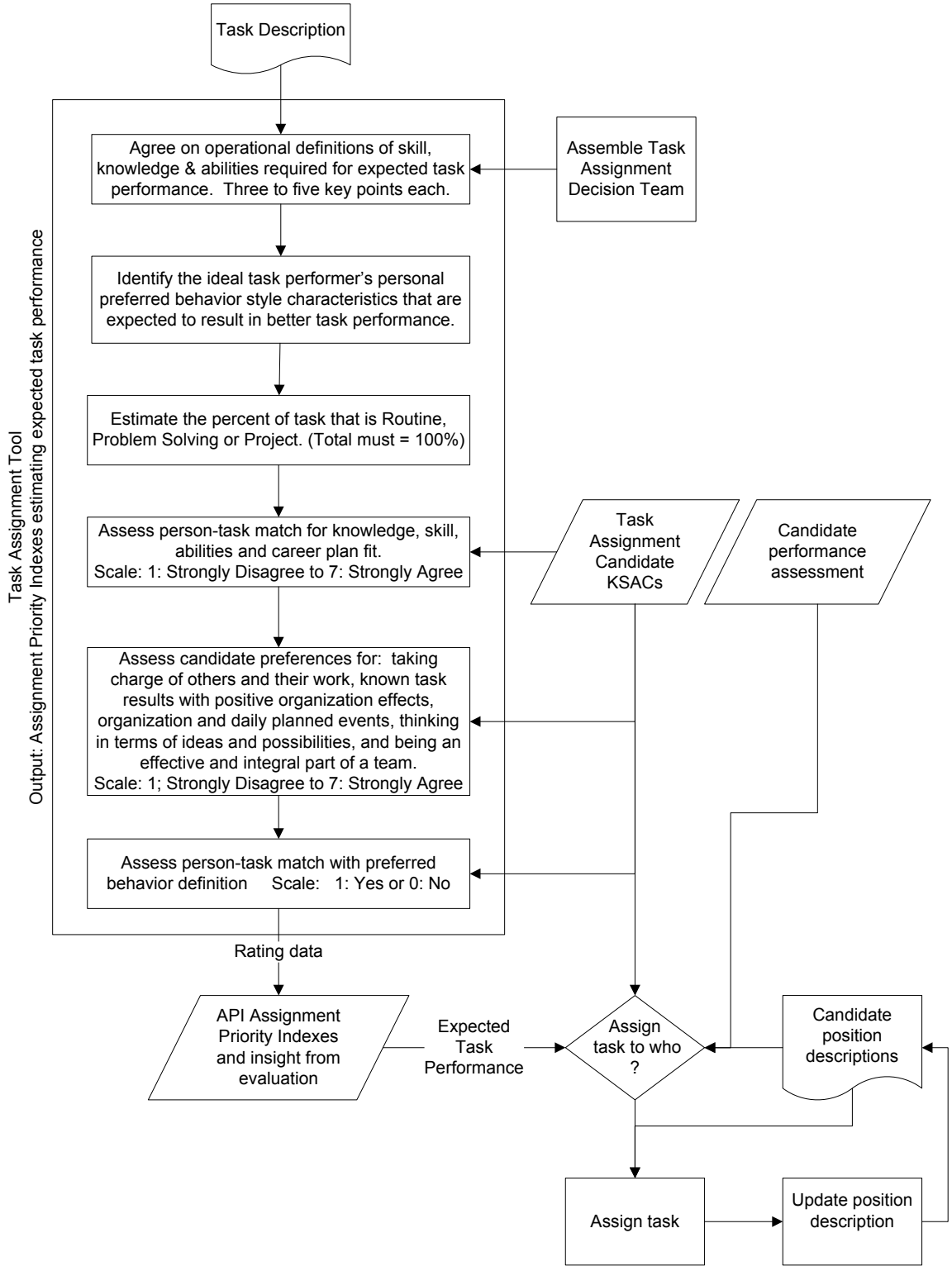


Figure 19. Task Assignment Process Aided with the Task Assignment Tool

Limitations

The data collected from both the lean leader and youth leader subject groups enables the results to be generalized over a broad group of knowledge workers who are responsible for a variety of non-routine tasks. However, the method for developing the task tool may be repeated for a different task types and performer groups. The data were anonymously collected and the measures were self-reported. The person-task assignment priority indexes were created based on self-reported task assessment data. The task categories were routine, problem solving and project. The lean leaders and youth leaders chose from three tasks in each category that were common within their profession. The assignment index coefficients for the task skill and task knowledge predictive variables were relatively large. They may have been separated into two or more undefined sub-categories to further differentiate or compare person-task assignments. Self-reported task performance was averaged for up to three different task assessments per respondent in an effort to collect a more valid measure of self-reported task performance; however, the expected correlation between task performance and job customization was not significant at the 95 percent confidence level.

Summary and Conclusions

This work studied the effect of job design customization and job documentation. The study results provide evidence supporting the practice of customizing job design and

documentation to better fit the knowledge worker's knowledge, skills, abilities and characteristics. The data from this research supported the following six conclusions.

Conclusion 1 - Job Customization Measure

The data provided evidence that the new job customization measure was valid, reliable, and useful for evaluating the hypotheses.

Discussion

The two-item job customization measure may be used in future studies where the degree of job design customization measure may contribute to a better understanding of variation in person-environment fit measurement. The measure demonstrated both validity and reliability.

Conclusion 2 - Job Customization Effect

The customization of a job design to better fit a job incumbent's knowledge, skills, abilities and characteristics was positively correlated to improvements in person-job fit, job satisfaction and negatively correlated with the intent to quit. The relationships were evaluated with hypotheses 1.a and 1.b.

Discussion

Table 27 on page 151 confirmed positive correlations between job customization and all outcomes except for task performance. The relationships do not prove causality.

Another unstudied variable may positively correlate with job customization and better explain outcome variable variation.

Tables 28 and 29 on page 152 reported job customization and outcome correlations by subject groups. The youth leader group reported significant correlations between job customization and all outcomes.

The lean leader group had a significant correlation only between job customization and person-job fit. The correlation coefficients for lean leader job customization and the outcome variables of job satisfaction and intent to quit would have significant p-values less than 0.05 if their sample size quantities were 89 for job satisfaction and 113 for intent to quit. The actual sample sizes were 80 for job satisfaction and 79 for intent to quit. Task performance was measured as the average of the one to three task assessments that were made from tasks selected from a pre-selected list. The tasks were common to lean leaders but the performance of these tasks appears to have a lower correlation to overall job performance for lean leaders than for youth leaders. It is expected that a more representative measure of overall performance is required for lean leaders to measure the expected impact of job customization on task or overall performance. Table 16 on page 142 reported the relatively high level of intent to quit and low level of need-supplies category of person-job fit for lean leaders. Lean leader job customization is expected to be a rewarding initiative.

Conclusion 3. Position Descriptions

The research provided support for the decision to document job designs as a position description for each position holder rather than a generic job description for each job type. The evaluation was performed with hypothesis 2.a.

Discussion

Table 31 on page 154 presented job description use statistics for the study sample. Forty-three percent of the lean leaders, of the 72 percent who had a job description, reported having an accurate job description. The significant value realized by the periodic use of the job description was reported in Table 32 on page 155. The value of documenting a unique position description was summarized by Grant (1989).

The practice of job design documentation may exist in many forms. A person may have a generic job description with a separate document that states their unique roles, responsibilities and task assignments. The Kano questions supported the respondent's preference for a unique job description that reflects their position's unique roles and responsibilities. The customization of a job description was seen as a *Delighter*. Job satisfaction ratings increased significantly if a job description was used and if it was reviewed periodically.

Conclusion 4 – Job Description Accuracy

An accurate job description was positively correlated with improved person-job fit and job satisfaction. The evaluation was performed with hypothesis 2.b.

Discussion

This finding confirms the expected value of a job description for improving person-job fit. Table 31 reported that 32 percent of lean leaders and 43 percent of youth leaders reported both having job descriptions and that they were used. Table 31 also reported that 43 percent of the lean leaders and 41 percent of the youth leaders strongly agreed that their job description accurately described their job.

Conclusion 5 – Job Design and Incumbent Preferred Behavior

A person's preferred behavior style affected their level of perceived person-job fit. The preferred behavior evaluations were made with Hypotheses 3.a. and 3.b. Forty-four percent of lean leaders characterized their preferred behavior as *conscientious.* *Conscientious* behavior styles reported that their job met their needs less than reported by the other three behavior types.

Discussion

People who characterized their preferred behavior as *conscientious* (moderate paced, thoughtful, calm with softer speech, questioning, results focuses and direct) reported significantly lower levels of person-job fit. Forty-four percent of the lean leaders characterized themselves as *conscientious*. This sub-group may more critically and openly judge their job fit and results. The reported difference may be with regard to the sub-group's methods of self evaluation and they may also have higher standards or expectations from their job design. Kristof-Brown and Jansen (2006) proposed that individuals high on conscientiousness place a greater emphasis on task related than other

forms of inter-personal fit. Job design is more closely related to task related than interpersonal fit.

There were insignificant differences in the levels of job customization between those with different preferred behavior styles. Persons who characterized their preferred behavior as *dominant* or active fast paced, assertive with louder speech, questioning, results focused and direct reported lower but non significant differences in the levels of job design customization. The parametric Two-sample T-Test indicated a significant difference; however, the Kruskal-Wallis Test for equal medians indicated a p-value of 0.058 indicating a non-significant difference. This *dominant* preferred behavior style's high assertiveness may tend to control or manipulate their environment and job activities in lieu of a formal design. The *dominant* style may also act more pro-actively and quickly to move to a job where there is a better fit between their knowledge, skills, abilities and characteristics. Twenty-eight percent of the lean leaders characterized themselves as *dominant*.

The *dominant* and *conscientious* preferred behavior styles perceive their environment as more unfavorable (i.e., resistant, unwelcoming, or skeptical) which may have resulted in lower ratings. The differences in people's preferred behaviors and the way they perceive their environment appear to support the need for a more formal person-job design process rather than leaving the responsibility for job customization and gap closure to the incumbent. This is especially true for lean leaders where 72 percent of the respondents characterized their preferred behavior type as one who perceives their environment as more unfavorable as compared to 29 percent for youth leaders. These

findings support the conclusion reached by Kristof-Brown and Jansen (2006) as described on pages 58 through 60.

Conclusion 6 – Task Assignment Tool Application

A task assignment tool (TAT) that uses multivariate equations to generate an index that measures the expected task effectiveness for person-task assignment decisions was developed. The tool was tested by 31 evaluators and found to be useful for person-task assignment. Responders felt more confident with the TAT ratings. The TAT provided more insight regarding the task assignment decision. The TAT was a better predictor of task performance that their normal method. They would be willing to recommend the application of the TAT if a similar tool was offered by their organization. And, they had positive overall satisfaction ratings for the tool.

Discussion

A manager's or decision maker's use of the person-task assignment index within a task assignment evaluation process is expected to provide an objective reference point and insight into to the key person-task fit factors. The study data provided evidence for developing assignment priority indexes to serve as a job aid for person task assignment decisions. The use of the tool as a job aid for a group decision process is expected to improve task assignment decisions effectiveness. The tool is applicable for knowledge workers who perform a variety of non-routine tasks and have job characteristics within the bounds of the lean leader or youth leader job designs; however, the tool might easily be adapted to other job classification by collecting similar data and performing the same

tool development procedure. The tasks selected for evaluation, person preference types, and preferred behavior classification methods may need to be modified to reflect different job characteristics.

Observations

There were two significant observations that were made during the data analysis that were not part of the hypotheses evaluations. The first observation is regarding the relationship between age and the level of job customization. The second was the strong correlation between person-job fit and job-satisfaction when compared to other similar studies.

Observation 1

A significant positive correlation exists between lean leader age and the level of job design customization.

Discussion

This relationship might be explained by leaders becoming more proficient and specialized while applying their unique knowledge, skills and abilities. They may migrate to those jobs and tasks where they are both satisfied and effective.

Observation 2

A strong positive correlation between person-job fit and job satisfaction for the lean leader and youth leader groups was observed. The correlation was greater than the upper limit of the 95 percent confidence interval for a meta-analysis that included 23 different studies. See table 14 for the comparison data.

Discussion

A conclusion may be drawn that person-job fit is a stronger driver of job satisfaction for lean leaders and youth leader knowledge workers than for other job types. The other job types in the meta-analysis include an unknown combination of knowledge workers and non-knowledge worker job designs.

Contributions

Industrial Engineering

The industrial engineer's organization or system responsibilities often include organization, process and job design. Business and manufacturing support processes frequently require knowledge worker assignment to routine, problem solving, and project tasks. This research recommends that the industrial engineers design knowledge worker jobs to better fit knowledge worker knowledge, skills, abilities and characteristics. The research confirmed expected gains in task performance, job satisfaction, person-job fit and intent to quit. The task assignment tool provides structure for the task assignment decision process and the assignment priority index is a normalized reference point for

comparing the effect of person-job assignment alternatives. The justification for documenting the job design as a position description will also help the industrial engineer implement, standardize and improve knowledge worker job designs.

Rob Savage (Taco Bell Corp., COO) served as a keynote speaker for the annual IIE conference held on June 7th, 2010. Savage spoke passionately regarding the critical ongoing role of the industrial engineer as "the person who brings humans into the process with a systems perspective." This research focused on the design of the knowledge worker's job design. The knowledge worker's job design is a fundamental building block of business systems and processes; the integrated design of the knowledge worker job into systems and processes is within the scope of the industrial engineering discipline.

Body of Knowledge

The job customization measure may be used in further person-environment fit research. The assignment priority indexes provide a baseline for developing models for predicting job performance for other work-type job classifications. The value of a position description versus a general job description was positively assessed. This knowledge may serve as a baseline for further study regarding the value of the effort to define and improve job knowledge worker roles, responsibilities and assigned tasks.

Knowledge Worker Productivity

Peter Drucker (1999) described knowledge worker productivity as the biggest of the 21st-century management challenges. Industrial engineers have traditionally standardized processes and designed jobs with a variety of goals: work safely, meet

quality requirements, meet schedule requirements, meet or exceed cost targets, reduce variation, increase value, and improve person-environment fit. The impact that industrial engineers may have on knowledge worker job design and person-environment fit is highly leveraged given the wide range of systems that knowledge workers affect. This research provides evidence that the customization of a knowledge worker's job design and the documentation of customized job designs as position descriptions are two initiatives that may be part of a successful knowledge worker productivity system change campaign.

Implications

The highly leveraged benefits of improved knowledge worker job design warrant an effort to improve their person-job fit. The job design improvement process requires an understanding of the job requirements and the incumbent's knowledge, skills, abilities, and characteristics. The job design process may include gap assessment, job design methods, structured task assignment, and the documentation of job designs as position descriptions. There are many reasons why job design is often relegated to the job holder and undocumented. A sustainable knowledge worker job design improvement process is recommended. Lean leader job designs appear to be an excellent job type for applying job customization due to the wide variety of job responsibilities, preferred behavior styles of the incumbents as *conscientious* and *dominant*, and the highly leveraged impact of their job outcomes on their organizations.

Future Research

Knowledge worker job design and task assignment is a fundamental management responsibility that may benefit from a structured process, measurement, and standardization. The Task Assignment Tool developed within this research is a simple job aid designed to be used to both guide a decision maker through a knowledge worker task assignment decision process and to offer a measured reference point for pair-wise person-task assignment comparison. The ten related questions listed in the *Assumptions and Limitations* section are also unanswered questions that may be considered for further research. Additionally, further research in the following areas may improve the understanding and application of the research outcomes and conclusions.

1. Further define the elements of task performer knowledge, skill and abilities characteristics that may more accurately predict task performance and differentiate among performers. Consider refining the definitions of skills and abilities to more precisely differentiate the two.

2. Apply the task assignment tool index to a work group's full set of task assignments. The total group's task performance index might be maximized using operations research methods as a starting point for an optimal work group person-task assignment solution.

3. Evaluate the effect of the frequency of a work group's person-job task reassignments on job outcomes.

4. Evaluate the effect of a collaborative group process for reassigning a set of tasks that are identified as transferable.

More research has been focused on improving the person-job selection process than on the process for improving the incumbent's person-job fit. This research recommends a concerted knowledge worker effort to define worker tasks, improve task design, evaluate person-task fit, customize job designs and document existing job designs in the form of a unique position description.

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Appendix A

Lean Leader Job Design Survey

Lean Leader Job Design Survey

Note: (Text entered parenthetically with an *italic font* describes the survey methodology and will not be included in the final survey. The survey will be administered electronically)

Consent:
You are invited to participate in a research project titled "Development of a Task Assignment Tool to Customize Job Descriptions to Close Job Specification and Person-Job Fit Gaps". The study is designed to analyze the effects of job customization and to develop a task assignment tool to improve a work groups person-job fit by better matching a job incumbent's skills, knowledge, abilities and characteristics to their assigned tasks.

The study is being conducted by Dr. Larry Mallak and Graduate Student Bryan Booker from Western Michigan University, Department of Industrial & Manufacturing Engineering. This research is being conducted as part of the dissertation requirements for Bryan Booker.

This survey instrument is comprised of 70 to 83 multiple choice and 2 open ended questions. The survey should take approximately 20 minutes to complete. Your replies will be completely anonymous, so do not put your name anywhere on the form. You may choose to not answer any question and simply leave it blank. Participation is voluntary. This consent document was approved for use for one year by Western Michigan University's HSIRB on _____. Do not participate after _____. Completing the survey indicates your consent for use of the answers you supply. If you have any questions, you may contact Larry Mallak at 269-276-3369, Bryan Booker at 616-886-9222, the Human Subjects Institutional Review Board (269-387-8293) or the vice president for research (269-387-8298).

Survey Purpose: To measure and better understand the relationship between a Lean Leader's job design, job satisfaction and job effectiveness. The data will be used to develop a knowledge worker task assignment tool to improve Person-Job fit.

Instructions: Please indicate your response selection by filling the appropriate circle or responding to the open ended questions.

About your job description…

1) The following questions are regarding your responsibilities and job description:

a) "Some of my job tasks, roles or responsibilities have been changed to better utilize my knowledge, skills, abilities or characteristics."

Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) Do you have a job description for your current job?
❍ Yes ❍ No *(if No then skip 1c-k)*

c) How would you feel if your current job design and description were customized to better match your knowledge, skills, attributes and characteristics? (Choose one best answer)

❍ I would like it that way.
❍ It should be that way.
❍ I am neutral.
❍ I could live with it that way.
❍ I would dislike it that way.
❍ None of the above.

d) How might you and your supervisor(s) better design or use your job description in order to improve your job effectiveness?

_____

_____

e) "My job description accurately describes my job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

f) Do you or your supervisor use your job description?
❍ Yes ❍ No *(if No then skip 1g-j)*

g) Have you and your supervisor identified gaps between your job requirements and your knowledge, skills, and abilities?
❍ Yes ❍ No

h) Are your assigned tasks prioritized by importance within your job description?
❍ Yes ❍ No

i) Do you have an expected amount of time that you should allocate to each task included in your job description?"
❍ Yes ❍ No

j) Do you and your supervisor(s) review your job description periodically?
❍ Yes ❍ No *(If no then skip 1.j.i)*

i) How frequently do you review your job description?

❍ Monthly
❍ Quarterly
❍ Six months
❍ Annually
❍ Bi-Annually
❍ None of the above

k) How would you feel if your current job description is a listing of job responsibilities common to most lean leaders? (Choose one best answer)

❍ I would like it that way
❍ It should be that way
❍ I am neutral
❍ I could live with it that way
❍ I would dislike it that way
❍ None of the above

About your job…

2) <u>The following 15 questions are regarding your satisfaction or fit with your organization and your job.</u>

a) *D-A* "My abilities and training are a good fit with the requirements of my job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) *JS* "Considering all aspects of my job, my overall level of job satisfaction is…"
Very Dissatisfied ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Very Satisfied

c) *N-S* "There is a good fit between what my job offers me and what I am looking for in a job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

d) *ITQ* "I would prefer another job to the one I have now."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

e) *Self-Concept-Job* "The performance of my job tasks makes me realize that I have several good qualities."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

f) *P-O* "The things I value in life are very similar to the things my organization values."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

g) *D-A* "My personal abilities and education provide a good match with the demands that my job places on me."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

h) *PROMO* Which level of job demands do you feel capable of performing in the future?"
❍Current job level demands
❍Next level of more demanding jobs
❍Organization's top level jobs

i) *N-S* "The attributes that I look for in a job are fulfilled very well by my present job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

j) *JS* "I feel a great sense of personal satisfaction when I do this job well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

k) *N-S* "The job that I currently hold gives me just about everything that I want from a job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

l) *ITQ* "If I have my way, I won't be working for this organization a year from now."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

m) *D-A* "The match is very good between the demands of my job and my personal skills."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

n) *Self-Concept-Job* "The performance of my job tasks makes me feel good about the person that I am."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

o) *P-O* "My personal values match the organization's values and culture."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

About your lean responsibilities…

3) The following question(s) are about your lean responsibilities:

a) Do your job responsibilities include lean leadership?
❍ Yes ❍ No *(If no then skip to 5)*

b) Is your lean leadership role your primary job responsibility?
❍ Yes ❍ No

c) How many years have you held a job title similar to lean leader?
❍ 0 - 1 ❍ 2 – 6 ❍ 7 – 11 ❍ 12 – 16 ❍ 17 – 21
❍ 22 – 26 ❍ 27 – 31 ❍ 32 – 36 ❍ 37 – 41 ❍ 42+

d) How many people work in the organization that your job interacts with?
❍ 1 - 50 ❍ 51 - 150 ❍ 151 – 350 ❍ 351 – 750
❍ 751 – 1550 ❍ 1551 - 3150 ❍ >3150

About your current job responsibilities …

4) The next questions will focus on tasks for your current job responsibilities as a lean leader:

a) Which one of the following tasks has the greatest impact on your job outcomes?
❍ Develop measurement systems
❍ Lead improvement events
❍ Plan recognition or celebration events

i) Would you like to allocate more or less of your work time to project tasks similar to the above?
❍ More ❍ Current or Same ❍ Less

ii) "The "TASK SELECTED IN PART a" task is critical for my job's success."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I believe that I perform the "TASK SELECTED IN PART a" task well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I have the knowledge, identifiable factual information, familiarity, awareness, or understanding gained through experience or study necessary to "TASK SELECTED IN PART a." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I have the skills, ease of movement and the dexterity acquired or developed through training or experience that is necessary to "TASK SELECTED IN PART a." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

i) "I have the abilities or general capability to "TASK SELECTED IN PART a." well. I have the necessary physical, mental, financial and positional power."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vi) "I am fully trained to "TASK SELECTED IN PART a. well"
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vii) "The "TASK SELECTED IN PART a." requires more capability and effort than what should be expected from my current job level."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

viii) "The "TASK SELECTED IN PART c." task fits my career plan well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) Which <u>one</u> of the following tasks has the <u>greatest impact</u> on your job outcomes?
- ❍ Audit project results to plan
- ❍ Facilitate improvement team meetings
- ❍ Correct inappropriate person behaviors

i) Would you like to allocate more or less of your work time to tasks similar to the above?
❍ More ❍ Current or Same ❍ Less

ii) "The "TASK SELECTED IN PART b" task is critical for my job's success."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I believe that I perform the "TASK SELECTED IN PART b" task well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I have knowledge, the identifiable factual information, familiarity, awareness, or understanding gained through experience or study necessary to "TASK SELECTED IN PART b." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I have the skills, ease of movement and the dexterity acquired or developed through training or experience that is necessary to "TASK SELECTED IN PART b." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I have the abilities or general capability to "TASK SELECTED IN PART b." well. I have the necessary physical, mental, financial and positional power."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vi) "I am fully trained to "TASK SELECTED IN PART b. well"
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vii) "The "TASK SELECTED IN PART b." requires more capability and effort than what should be expected from my current job level."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

viii) "The "TASK SELECTED IN PART b." task fits my career plan well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

c) Which <u>one</u> of the following tasks has the <u>greatest impact</u> on your job outcomes?
- ❍ Communicate to group and organization
- ❍ Flow chart or characterize processes
- ❍ Teach lean principles and tools

i) Would you like to allocate more or less of your work time to routine tasks similar to the above?
❍ More ❍ Current or Same ❍ Less

ii) "The "TASK SELECTED IN PART c" task is critical for my job's success."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I believe that I perform the "TASK SELECTED IN PART c" task well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I have the knowledge, identifiable factual information, familiarity, awareness, or understanding gained through experience or study necessary to "TASK SELECTED IN PART c." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I have the skills, ease of movement and the dexterity acquired or developed through training or experience that is necessary to "TASK SELECTED IN PART c." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I have the abilities or general capability to "TASK SELECTED IN PART c" well. I have the necessary physical, mental, financial and positional power."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vi) "I am fully trained to "TASK SELECTED IN PART c. well"
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vii) "The "TASK SELECTED IN PART c." requires more capability and effort than what should be expected from my current job level."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

viii) "The "TASK SELECTED IN PART c." task fits my career plan well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

About for Your Work Preferences …

5) The next fifteen questions will focus on four different types of work preferences:

a) Work Interests:

i) "I prefer tasks that require working with, studying about, building or repairing THINGS."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that require working with numbers, analyzing numbers, & keeping data records."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I prefer tasks that require studying information, retaining it and using it."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I prefer tasks that require taking responsibility for others work and taking charge."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I prefer tasks that require caring for, coaching, or helping others."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) Work Values:

i) "I prefer tasks that require working independently and making my own decisions."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that allow me to be well liked and get along with others."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I prefer tasks where results are known and the positive value to the organization is understood."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I prefer tasks that require being an effective and integral part of a team."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

c) Personality or Temperament:

i) "I prefer tasks where guidance is given to clarify task expectations and the tasks have helpful training and specific instructions."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that require thinking in terms of ideas and possibilities. They might require working with concepts or theories, idea generation, creative thinking or research."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I prefer tasks that require organization with daily events planned ahead."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I prefer tasks that allow personal freedom to choose when and how to perform."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

d) Learning Style:

i) "I prefer tasks that require learning through open conversation and explanations."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that require reading from written materials, computers or other visual sources of information."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

About changes to your job to reflect you …

6) "The design of my job (assigned tasks, roles & responsibilities) has been <u>changed</u> to better fit my knowledge, skills, abilities or characteristics."

a) Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree
(If 1-4 then skip 6. b-f)

b) Who initiated the job design change?
❍ You ❍ Your Work Group ❍ Your Supervisor ❍ Other

c) <u>Was your job description updated</u> to reflect the changes made to your job to better fit your knowledge, skills, abilities or characteristics?
❍ Yes ❍ No (*If no then skip 6 d)*

d) Was your current job description modified to reflect any of the following?
Check all that apply

❍ Experience	❍ Education	❍ Skills
❍ Personality	❍ Knowledge	❍ Career Goals

❍ Preferences ❍ Coworker Job Descriptions

e) If tasks were eliminated from your job design then where were they reassigned?
Check all that apply
❍ Delegated to your subordinate ❍ Not reassigned
❍ Reassigned to person with different job description
❍ Reassigned to other person with similar job description
❍ Tasks were eliminated

f) "Please think of a specific situation when your job design was modified to enhance your effectiveness. Why and how was it modified?"
_____
_____

About you and your preferred behaviors …

7) The following two questions address your preferred behaviors as a lean leader:

a) Are you MORE:

❍ active fast paced, assertive with louder speech
(if checked then answer. 7b)

- or -

❍ moderate paced, thoughtful, calm with softer speech.
(if checked then answer 7c)

b) Are you MORE:

❍ questioning, results focused and direct *(D: Dominance)*
- or -
❍ accepting, enthusiastic, and sociable. *(I: Influence)*

c) Are you MORE:
- ❍ questioning, accuracy focused and analytical. *(C: Conscientiousness)*

or
- ❍ accepting, patient and empathetic. *(S: Steadiness)*

The following questions are about you and your experience ….

8) What is the highest level of formal education degree that you attained?

❍ High School *(skip 10)* ❍ Associate ❍ Bachelors
❍ Masters ❍ Doctorate ❍ None of the above *(skip 9)*

9) Which of the following disciplines does your degree(s) best fit?

❍ Industrial Engineering ❍ Manufacturing Engineering
❍ Engineering (other) ❍ Business Administration
❍ Social Sciences ❍ Physical Sciences
❍ Education ❍ Other

10) What is your current age?

❍ 17 - 21 ❍ 22 – 26 ❍ 27 – 31 ❍ 32 – 36 ❍ 37 – 41
❍ 42 – 46 ❍ 47 - 51 ❍ 52 – 56 ❍ 57 – 61 ❍ 62 – 66
❍ 67 – 71 ❍ 72+

11) What is your gender? ❍ Male ❍ Female

Thank you for investing your time and thought to provide feedback that will be used to improve lean implementation effectiveness and lean leader job satisfaction. The data will also be used to develop a model for effectively assigning tasks within a work group

Appendix B

Youth Leader Job Design Survey

Youth Leader Job Design Survey

NOTE: (Text entered parenthetically with an *italic font* describes the survey methodology and will not be included in the final survey. The survey will be administered electronically.)

Consent:

You are invited to participate in a research project titled "Development of a Task Assignment Tool to Customize Job Descriptions to Close Job Specification and Person-Job Fit Gaps". The study is designed to analyze the effects of job customization and to develop a task assignment tool to improve a work groups Person-Job fit by better matching a job incumbent's skills, knowledge, abilities and characteristics to their assigned tasks.

The study is being conducted by Dr. Larry Mallak and Graduate Student Bryan Booker from Western Michigan University, Department of Industrial & Manufacturing Engineering. This research is being conducted as part of the dissertation requirements for Bryan Booker.

This survey instrument is comprised of 70 to 83 multiple choice and two and 2 open ended questions. The survey should take approximately 20 minutes to complete. Your replies will be completely anonymous, so do not put your name anywhere on the form. You may choose to not answer any question and simply leave it blank. Participation is voluntary. This consent document was approved for use for one year by Western Michigan University's HSIRB on _____. Do not participate after _____. Completing the survey indicates your consent for use of the answers you supply. If you have any questions, you may contact Larry Mallak at 269-276-3369, Bryan Booker at 616-886-9222, the Human Subjects Institutional Review Board (269-387-8293) or the vice president for research (269-387-8298).

Survey Purpose: To measure and better understand the relationship between a youth leader's job design, job satisfaction and organization effectiveness. The data will be used to develop a knowledge worker task assignment tool to improve person-job fit.

Instructions: Please indicate your response selection by clicking the appropriate circle or responding to the open ended questions.

About your job description…

1) The following questions are regarding your responsibilities and job description:

a) "Some of my job tasks, roles or responsibilities have been changed to better utilize my knowledge, skills, abilities or characteristics."

Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) Do you have a job description for your current job?
❍ Yes ❍ No *(if No then skip 1c-k)*

c) How would you feel if your current job description was customized to better match your knowledge, skills, attributes and characteristics? (Choose one best answer)

❍ I would like it that way.
❍ It should be that way.
❍ I am neutral.
❍ I could live with it that way.
❍ I would dislike it that way.
❍ None of the above.

d) How might you and your supervisor(s) better design or use your job description in order to improve your job effectiveness?

_____

_____

e) Does your job description accurately describe your job responsibilities?
❍ Yes ❍ No

f) Do you or your supervisor use your job description?
❍ Yes ❍ No *(if No then skip 1g-j)*

g) Have you and your supervisor identified gaps between your job requirements and your knowledge, skills, and abilities?
❍ Yes ❍ No

h) Are your assigned tasks prioritized by importance within your job description?
❍ Yes ❍ No

i) Do you have an expected amount of time that you should allocate to each task included in your job description?"
❍ Yes ❍ No

j) Do you and your supervisor(s) review your job description periodically?
❍ Yes ❍ No *(If no then skip 1.j.i)*

i) How frequently do you review your job description?

❍ Monthly
❍ Quarterly
❍ Six months
❍ Annually
❍ Bi-Annually
❍ None of the above

k) How would you feel if your current job description is a listing of job responsibilities common to most lean leaders? (Choose one best answer)

❍ I would like it that way
❍ It should be that way
❍ I am neutral
❍ I could live with it that way
❍ I would dislike it that way
❍ None of the above

About your job…

1) <u>The following 15 questions are regarding your satisfaction or fit with your organization and your job.</u>
Note: Your organization refers to the church or organization who employs you as a youth leader.

a) *D-A* "My abilities and training are a good fit with the requirements of my job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) *JS* "Considering all aspects of my job, my overall level of job satisfaction is…"
Very Dissatisfied ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Very Satisfied

c) *N-S* "There is a good fit between what my job offers me and what I am looking for in a job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

d) *ITQ* "I would prefer another job to the one I have now."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

e) *Self-Concept-Job* "The performance of my job tasks makes me realize that I have several good qualities."

Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

f) *P-O* "The things I value in life are very similar to the things my organization values."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

g) *D-A* "My personal abilities and education provide a good match with the demands that my job places on me."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

h) *PROMO* Which level of job demands do you feel capable of performing in the future?"
❍ Current job level demands
❍ Next level of more demanding jobs
❍ Organization's top level jobs

i) *N-S* "The attributes that I look for in a job are fulfilled very well by my present job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

j) *JS* "I feel a great sense of personal satisfaction when I do this job well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

k) *N-S* "The job that I currently hold gives me just about everything that I want from a job."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

l) *ITQ* "If I have my way, I won't be working for this organization a year from now."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

m) *D-A* "The match is very good between the demands of my job and my personal skills."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

n) *Self-Concept-Job* "The performance of my job tasks makes me feel good about the person that I am."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

o) *P-O* "My personal values match the organization's values and culture."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

About your youth leader responsibilities …

3) The following questions are about you and your experience as a youth leader.

a) Is your role as youth leader your primary job responsibility?
❍ Yes ❍ No *(If no then skip to 5)*

b) Which of the following best describes your employment status?
❍ Volunteer ❍ Paid - Part Time ❍ Paid – Full Time

c) How many years have you held a job title similar to youth leader?
❍ 0 - 1 ❍ 2 – 6 ❍ 7 – 11 ❍ 12 – 16 ❍ 17 – 21
❍ 22 – 26 ❍ 27 – 31 ❍ 32 – 36 ❍ 37 – 41 ❍ 42+

d) How many people attend your youth activities on a typical week?
❍ 1 - 10 ❍ 11 - 30 ❍ 31 – 70 ❍ 71 – 150
❍ 151 – 310 ❍ 311 – 630 ❍ > 630

About your current job responsibilities …

2. The next questions will focus on tasks for current job responsibilities as a youth leader:

a) Which of the one of the following tasks has the greatest impact on your job outcomes?
❍ Plan youth events
❍ Raise funds
❍ Recruit and train youth leaders

i) Would you like to allocate more or less of your work time to project tasks similar to the above?
❍ More ❍ Current or Same ❍ Less

ii) "The "TASK SELECTED IN PART a" task is critical for my job's success."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I believe that I perform the "TASK SELECTED IN PART a" task well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I have the knowledge, identifiable factual information, familiarity, awareness, or understanding gained through experience or study necessary to "TASK SELECTED IN PART a." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I have the skills, ease of movement and the dexterity acquired or developed through training or experience that is necessary to "TASK SELECTED IN PART a." well."

Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vi) "I have the abilities or general capability to "TASK SELECTED IN PART a" well. I have the necessary physical, mental, financial and positional power."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vii) "I am fully trained to "TASK SELECTED IN PART a. well"
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

viii) "The "TASK SELECTED IN PART a." requires more capability and effort than what should be expected from my current job level."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ix) "The "TASK SELECTED IN PART a." task fits my career plan well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) Which of the <u>one</u> of the following tasks has the <u>greatest impact</u> on your job outcomes?

- ❍ Correct inappropriate youth behaviors
- ❍ Counsel youth
- ❍ Evaluate and make corrections to programs or processes

i) Would you like to allocate more or less of your work time to tasks similar to the above?
❍ More ❍ Current or Same ❍ Less

ii) "The "TASK SELECTED IN PART b" task is critical for my job's success."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I believe that I perform the "TASK SELECTED IN PART b" task well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I have the knowledge, identifiable factual information, familiarity, awareness, or understanding gained through experience or study necessary to "TASK SELECTED IN PART b." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I have the skills, ease of movement and the dexterity acquired or developed through training or experience that is necessary to "TASK SELECTED IN PART b." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vi) "I have the abilities or general capability to "TASK SELECTED IN PART b." well. I have the necessary physical, mental, financial and positional power."

Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vii) "I am fully trained to "TASK SELECTED IN PART b. well"
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viii) "The "TASK SELECTED IN PART b." requires more capability and effort than what should be expected from my current job level."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ix) "The "TASK SELECTED IN PART b." task fits my career plan well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

c) Which of the <u>one</u> of the following tasks has the <u>greatest impact</u> on your job outcomes?
- ❍ Communicate to the group and organization
- ❍ Track and record progress to goals
- ❍ Visit youth (school, event, home, restaurant etc.)

i) Would you like to allocate more or less of your work time to routine tasks similar to the above?
❍ More ❍ Current or Same ❍ Less

ii) "The "TASK SELECTED IN PART c" task is critical for my job's success."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I believe that I perform the "TASK SELECTED IN PART c" task well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I have the knowledge, identifiable factual information, familiarity, awareness, or understanding gained through experience or study necessary to "TASK SELECTED IN PART c." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I have skills, the ease of movement and the dexterity acquired or developed through training or experience that is necessary to "TASK SELECTED IN PART c." well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vi) "I have the abilities or general capability to "TASK SELECTED IN PART c" well. I have the necessary physical, mental, financial and positional power."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

vii) "I am fully trained to "TASK SELECTED IN PART c. well"
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

viii) "The "TASK SELECTED IN PART c." requires more capability and effort than what should be expected from my current job level."

Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ix) "The "TASK SELECTED IN PART c." task fits my career plan well."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

About your work preferences …

3. The next fifteen questions will focus on four different types of work preferences:

a) Work Interests:

i) "I prefer tasks that require working with, studying about, building or repairing THINGS."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that require working with numbers, analyzing numbers, & keeping data records."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I prefer tasks that require studying information, retaining it and using it."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I prefer tasks that require taking responsibility for others work and taking charge."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

v) "I prefer tasks that require caring for, coaching, or helping others."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

b) Work Values:

i) "I prefer tasks that require working independently and making my own decisions."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that allow me to be well liked and get along with others."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I prefer tasks where results are known and the positive value to the organization is understood."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I prefer tasks that require being an effective and integral part of a team."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

c) Personality or Temperament:

i) "I prefer tasks where guidance is given to clarify task expectations and the tasks have helpful training and specific instructions."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that require thinking in terms of ideas and possibilities. They might require working with concepts or theories, idea generation, creative thinking or research."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iii) "I prefer tasks that require organization with daily events planned ahead."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

iv) "I prefer tasks that allow personal freedom to choose when and how to perform."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

d) Learning Style:

i) "I prefer tasks that require learning through open conversation and explanations."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

ii) "I prefer tasks that require reading from written materials, computers or other visual sources of information."
Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

About changes to your job to reflect you …

4. "The design of my job (assigned tasks, roles & responsibilities) has been <u>changed</u> to better fit my knowledge, skills, abilities or characteristics."

Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree
(If 1 - 4 then skip 6.a-e)

a) Who initiated the job design change?
❍ You ❍ Work Group ❍ Supervisor

b) <u>Was your job description updated</u> to reflect the changes made to your job to better fit your knowledge, skills, abilities or characteristics?
❍ Yes ❍ No *(If no then skip 7.c-e)*

c) Was your current job description modified to reflect any of the following?
Check all that apply

❍ Experience ❍ Education ❍ Career Goals
❍ Personality ❍ Knowledge
❍ Preferences ❍ Coworker Job Descriptions ❍ Skills

d) If tasks were eliminated from your job design then where were they reassigned?
Check all that apply
❍ Delegated to your subordinate ❍ Not reassigned
❍ Reassigned to person with different job description
❍ Reassigned to other person with similar job description
❍ Tasks were eliminated

e) Please think of a specific situation when your job was modified to accommodate you or enhance your effectiveness. Why and how was it modified?

_____

About you and your preferred behaviors…

5. The following two questions address your preferred behaviors as a youth leader:

a) Are you MORE:
❍ active fast paced, assertive with louder speech.
(if checked then answer. 7b)
- or -
❍ moderate paced, thoughtful, calm with softer speech.
(if checked then answer 7c)

b) Are you MORE:

❍ questioning, results focused and direct.
(D: Dominance or Assertiveness)
- or -
❍ accepting, enthusiastic, and sociable.
(I: Influence or Communication)

c) Are you MORE:
❍ questioning, accuracy focused and analytical.
(C: Conscientiousness or Patience)
or
❍ accepting, patient and empathetic.

(S: Steadiness or Structure)

About you and your experiences…

6. The following questions are about you and your experience

   a) What is the highest level of formal education degree that you attained?
      ❍ High School ❍ Associate ❍ Bachelors
      ❍ Masters ❍ Doctorate ❍ None of the above

   b) Did one or more of your degrees focus on the youth leader job?
      ❍ Yes ❍ No

   c) What is your current age?
      ❍ 17 - 21 ❍ 22 – 26 ❍ 27 – 31 ❍ 32 – 36 ❍ 37 – 41
      ❍ 42 – 46 ❍ 47 - 51 ❍ 52 – 56 ❍ 57 – 61 ❍ 62 – 66
      ❍ 67 – 71 ❍ 72+

   d) What is your gender? ❍ Male ❍ Female

Thank you for investing your time and thought to provide feedback that will be used to help better understand the effect of job customization on youth leader job satisfaction and task effectiveness. The data will also be used to develop a task assignment tool for effectively assigning tasks within a work group.

Appendix C

Youth Job Descriptions

Youth Job Descriptions: (Gilbert, 2001)

The following job descriptions might all be considered part of a youth pastors job; however, they may be defined to customize the youth pastor job and improve organizational effectiveness.

- Youth Activities Assistant
- Youth Activities Coordinator
- Youth Care Group Leader
- Youth Chaperone
- Youth Class Secretary
- Youth Counselor/Mentor
- Youth Fund-Raising Coordinator
- Youth Guest Follow-Up Assistant
- Youth Missions Coordinator
- Youth Outreach Leader (Job description follows)
- Youth Pastor (Job description follows)
- Youth Records Clerk
- Youth Snack Coordinator
- Youth Teacher
- Youth Teacher Assistant
- Person Specification for Youth Pastor

Youth Pastor

The youth pastor will direct and oversee the youth ministry; educate, minister to and include teens in the ministry of the church and follow up with teen guests.

Ministry Area/Department	Youth
Position	Youth pastor
Accountable To	Pastor
Ministry Target	Teens
Position Is	Paid staff
Position May Be Filled By	Church member
Minimum Maturity Level	Stable, mature Christian
Spiritual Gifts	Pastor/shepherd • Mercy-showing • Administration • Teaching
Talents or Abilities Desired	Education and experience in theology and counseling • Good role model • No criminal record
Best Personality Traits	Expresser-leader • Compassionate • Dependable • Analytical
Passion For	Ministering to and with teens, with a heart for understanding their special needs and a desire to include this valuable group of people in the ministry of the church
Length of Service Commitment	Two years minimum

Anticipated Time Commitments

1. Doing ministry/preparing for ministry: forty hours a week, off on Saturday and one day during week, except for emergencies and special occasions
2. Participating in meetings/training: one hour a month

Responsibilities/Duties

1. Give direction to and oversee the youth ministry.
    a. Identify the needs and interests of teens within the church and community.
    b. Plan and develop programs for the youth ministry.
    c. Evaluate existing programs to determine effectiveness.
    d. Identify and provide ministry opportunities for teens.

2. Meet monthly with youth ministry leaders to pray and to discuss upcoming events, challenges, solutions and praises.
3. Recruit youth workers as needed. Provide training for youth workers as needed. Plan one major training/inspirational workshop a year.
4. Provide counseling and spiritual direction to teens on an individual basis.
5. Participate in outreach ministry to teens who have visited the church: visits, letters, etc.
6. Lead midweek Bible study for teens.
7. Plan at least one yearly youth retreat for the purpose of spiritual edification.
8. Visit teens who are hospitalized.
9. Participate in training opportunities yearly, or as presented.
10. Develop the youth ministry budget and track expenditures throughout the year.
11. Compile a youth directory, have copies made and distribute to teens and youth workers.

Youth Outreach Leader

The youth outreach leader is responsible for contacting and beginning relationships with prospects, visitors and new members of the youth group in order to point them to Christ and assimilate them into the church through Sunday School or other Bible-study groups.

Ministry Area/Department	Youth
Position	Youth outreach leader
Accountable To	Youth pastor
Ministry Target	Teens
Position Is	Volunteer
Position May Be Filled By	Church member
Minimum Maturity Level	Stable, maturing Christian
Spiritual Gifts	Exhortation • Evangelism • Administration
Talents or Abilities Desired	Able to communicate well with others • Organized • Good role model • No criminal record
Best Personality Traits	Expresser-leader • Outgoing
Passion For	Influencing teens for Christ and encouraging them to

	become involved in the local church
Length of Service Commitment	One year minimum

Anticipated Time Commitments

1. Doing ministry/preparing for ministry: two to four hours a week
2. Participating in meetings/training: one hour a month

Responsibilities/Duties:

1. Participate in training opportunities.
2. Coordinate efforts with church outreach director and inform of visitation progress.
3. Work with youth class members to identify, witness to and minister to prospects and enroll new members.
4. Develop a prospects file and keep a record of contacts and results.
5. Pray for prospects, visitors and new members.
6. Initiate follow-up contacts with youth class visitors: phone, write, visit.
7. Contact prospects to inform them of youth class studies and activities, and invite them to participate: phone, write, visit.
8. Be prepared to lead prospects to Christ or to provide a counselor when needed.
9. Welcome visitors and help new members feel accepted; introduce them to others; assimilate them into the life of the church.

Appendix D

Job/Person Specification Example

Job/Person Specification Example
(www.christchurch-virginiawater.co.uk/youthpastor.pdf, 9/07/07)

Statement about the Current Youth Ministry
Christ Church is a conservative evangelical church in leafy Surrey, with an average Sunday attendance of over 400. We have been blessed in recent years with considerable growth, and are committed to continuing to reach out to our community with the good news of Jesus Christ. Our Youth Ministry (ages 11-18) is a vibrant and growing ministry area which involves over 90 young people, and which now needs to be taken forward by someone who will teach faithfully, think strategically, minister relationally, build leaders and cast the vision for the next 5 years, and beyond.

Vision:
To see the young people of Virginia Water, brought into a personal relationship with God through Jesus Christ, to nurture them in the faith and prepare them for adulthood as fully devoted followers of Jesus Christ.

Aims and Objectives:
We are seeking to appoint a church based full time youth pastor to work with ages 11-18, to:

- Provide overall vision and leadership to the youth ministry at Christ Church in line with the church's aims and objectives.
- Consolidate and expand the youth ministry in and through Christ Church.
- Successfully manage the transitions from Sunday Club to Youth Ministry, and from Youth Ministry to Student and Adult Ministry.
- Identify, equip and train new leaders to share in the youth ministry.

Desirable Qualifications

- A clear calling to youth ministry.
- Experience of working with young people in a Christian setting.
- A degree or equivalent in theology or youth ministry.

Personal Attributes:

- A vibrant personal faith in Jesus Christ.
- A love for young people.
- A role model of Christian values, disciplines and spiritual life.
- Ability to teach the Bible to young people.
- A confidence in leading both small and large groups or meetings.
- Relational and bridge-building skills.
- Humility and teachable.
- Willingness to work within a ministry team.
- Flexibility and enthusiasm.
- Good time management
- A sense of humour.

Principal Responsibilities:

1. To take responsibility for the evangelisation, spiritual growth and pastoral care of the youth of Christ Church Virginia Water, and integrate them within the church family.

2. To plan and pray for the development of Christian youth work in and through Christ Church with particular reference to the school years 7-13. Specifically:

- To teach the existing Pathfinder Sunday club group for aged 11-14.
- To train additional leaders for the youth ministry.
- To teach the existing 14-18 year old Bible study group.
- To participate in and initiate greater youth involvement in Sunday services.
- To be responsible for the 14-18 activities on Sunday Evenings.
- To be responsible for monthly Youth led Services.
- To lead the 11-14 year old W@C (Wednesdays @ Christ Church) activities

3. To exercise active pastoral concern for the young people of the church. To come along side them, respond to their needs and help them to know God personally.

4. To support existing leaders and encourage and motivate new leaders to expand the youth ministry at Christ Church.

5. To explore, recommend and facilitate new initiatives in evangelistic outreach among the young people of Virginia Water in partnership with the clergy and staff team.

6. To be aware of current legislation regarding the welfare and protection of young people and to ensure adherence to the Child Protection Policy agreed by Christ Church PCC, as it applies to the Youth Ministry (ages 11-18).

7. Continue an agreed programme of personal development and theological training.

Accountability:

1. The contract will be between the youth pastor and Christ Church PCC. The youth pastor will be accountable to a designated member of the clergy.

2. It would be a condition of employment that the youth worker become a fully participating member of Christ Church, endorse the vision, five year plan, distinctive values, membership scheme and attend services regularly.

3. The Youth pastor will meet weekly with a nominated supervisor for planning and review of activities, and for support.

Working Relationships:

1. The youth pastor will join the Church staff team.

2. The youth pastor will meet with a designated member of the clergy on a weekly basis for supervision, support and accountability.

3. The youth pastor will participate in the weekly staff meeting and ministry meeting.

Liaison:

1. The youth pastor is expected to maintain contact with the Diocesan Youth Advisor and participate in Diocesan events and training arranged for parish youth workers as appropriate.

2 The youth pastor is encouraged to develop working relationships with other locally based youth workers, as appropriate.

Training & Support:

1 All staff are encouraged to continue their personal and professional development. Funding for this may be available.

2 A performance review will take place with the supervisor after three months and then in January and July

Appendix E

Job Crafting Model

Job Crafting Model

(Wrzesniewski & Dutton, 2001, pp. p. 182, 185)

Forms of Job Crafting:

- Changing number, scope, and type of job tasks
- Changing quantity and/or amount of interaction with others encountered in job
- Changing cognitive task boundaries

A Model of Job Crafting

Motivations	Moderating Variables	Job Crafting Practices	Specific Effects	General Effects
Need for control over job and work meaning	Perceived opportunity to job craft	Changing task boundaries (alter number or type of tasks)	Change the design of the job	Change the meaning of work
Need for positive self-image	Individual orientation toward work	Changing cognitive task boundaries	Change the social environment at work	Change ones work identity
Need for human connection with others	Motivational orientations	Changing relational boundaries (who and nature of interactions)		

Appendix F

Inscape Publishing, Inc. *DiSC* Question Authorization Letter

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PERMISSIONS AGREEMENT

To: Bryan Booker
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Western Michigan University
1484 Post Ave.
Holland , MI 49424

From: Racheal Rassier
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(signature - IPI)

Western Mich. Univ. Graduate Student
(title)

President
(title)

11/11/07
(date)

19 Nov 2007
(date)

Appendix G

SME and AME Lean Body of Knowledge (BOK)

SME and AME Lean Body of Knowledge (BOK)
(Version 2, March 2006)

1. Enablers for Lean
   1.1. Leadership
   1.2. Empowerment and Human Development

2. Lean Core Operations
   2.1. Operational Vision and Strategy

   2.2. Innovations in Product Design and Market Service

   2.3. Suppliers and Customers (relationship development)
      2.3.1. Suppliers
      2.3.2. Customers
      2.3.3. Distribution and Transportation Alliances

   2.4. Core Operations & Processes
      2.4.1. Systematic Identification and Elimination of Waste
      2.4.2. Just-In-Time Operations
      2.4.3. Cellular and Continuous Flow
      2.4.4. Lean Tools for Continuous Improvement

3. Business Core Operations Support Functions
   3.1. Administrative Vision and Strategy in Finance and Accounting, Human Resources, Materials Management, Information Technology, Sales and Marketing, Quality Assurance, Process & Manufacturing Engineering and Legal & Regulatory
      3.1.1. The BOK in this section is analogous to Module 2, it applies to business and service processes
      3.1.2. Alignment and Systematic Service and Business Process Design.

4. Quality Cost and Delivery Measures
   4.1. Quality & Quality Improvement
   4.2. Cost & Productivity Improvement
   4.3. Delivery & Customer Service Improvement

5. Business Results
   5.1. Customer Satisfaction Results
   5.2. Business Results
   5.3. Profitability Measurement

Appendix H

Herzberg's Principles of Vertical Job Loading

Herzberg's Principles of Vertical Job Loading

	Principle	Motivators Involved
A	Removing some controls while retaining accountability	Responsibility and personal achievement
B	Increasing the accountability of individuals for own work	Responsibility and recognition
C	Giving a person a complete natural unit of work (module, division, area and so on)	Responsibility, achievement, and recognition
D	Granting additional authority to employees in their activity; job freedom	Responsibility, achievement, and recognition
E	Making periodic reports directly available to the workers themselves rather than to supervisors	Internal recognition
F	Introducing new and more difficult tasks not previously handled	Growth and learning
G	Assigning individuals specific or specialized tasks, enabling them to become experts	Responsibility, growth, and advancement

Appendix I

Twelve Different Job Description Characteristics

Twelve Different Job Description Characteristics

(Grant, 1989, pp. 2-3)

1. The work design.
2. Justification for human resource investment.
3. Degree of specificity by which the jobholder can mold the job to better match their specific needs and characteristics.
4. What an employee does in the organization. Tasks and responsibilities.
5. Major components of the job structure.
6. How the job relates administratively and operationally, to other jobs in the organizational system.
7. Jobs within the organization are interdependent to make up the whole.
8. Job boundaries.
9. Pattern of behavior expectations.
10. The role: "work relations with others, justification for existence of the position, the impact of one's behavior in the position on the other workers, as well as when, where, and with what resources tasks should be performed."
11. The position: "The JD attaches to the position not the person. An employee may perform the tasks incorporated in a number of different positions at times. The employees job does not change even if they are asked fulfill other jobs in addition to their own." (Grant, 1989) (p. 3)
12. Reason for the job.

Appendix J

Human Resources Body of Knowledge (BOK) - Related to Job Design

Human Resources Body of Knowledge (BOK) - Related to Job Design

(www.hrci.org/Certification/BOK/NBOK, 11/10/07)

The Human Resource Certification Institute (HRCI) developed the Human Resources Managers credentialing program for Professional in Human Resources (PHR) and Senior Professional in Human Resources (SPHR). The PHR and SPHR exams are maintained to reflect actual HR practices. The latest revision to the BOK was completed in 2005.

02 WORKFORCE PLANNING AND EMPLOYMENT
Developing, implementing, and evaluating sourcing, recruitment, hiring, orientation, succession planning, retention, and organizational exit programs necessary to ensure the workforce's ability to achieve the organization's goals and objectives.

Responsibilities:
03 Conduct job analyses to create job descriptions and identify job competencies.
04 Identify and document essential job functions for positions.
05 Establish hiring criteria based on job descriptions and required competencies.
07 Assess skill sets of internal workforce and external labor market to determine the availability of qualified candidates, utilizing third party vendors or agencies as appropriate.
11 Develop and implement selection procedures, including applicant tracking, interviewing, testing, reference and background checking, and drug screening.

Knowledge of:
14 Reliability and validity of selection tests/tools/methods.
15 Use and interpretation of selection tests (for example, psychological/personality, cognitive, motor/physical assessments, performance, assessment center).
21 Internal workforce assessment techniques (for example, skills testing, skills inventory, workforce demographic analysis) and employment policies, practices, and procedures (for example, orientation and retention).

03 HUMAN RESOURCE DEVELOPMENT
Developing, implementing, and evaluating activities and programs that address employee training and development, performance appraisal, talent and performance management, and the unique needs of employees, to ensure that the knowledge, skills, abilities, and performance of the workforce meet current and future organizational and individual needs.

Responsibilities:
03 Develop/select and implement employee training programs (for example, leadership skills, harassment prevention, computer skills) to increase individual and organizational effectiveness. Note that this includes training design and methods for obtaining feedback from training (e.g., surveys, pre- and post-testing).
04 Evaluate effectiveness of employee training programs through the use of metrics (for example, participant surveys, pre- and post-testing).
05 Develop, implement, and evaluate talent management programs that include assessing talent, developing talent, and placing high-potential employees.
08 Develop, implement, and evaluate performance management programs and procedures (for example, goal setting, job rotations, promotions).
09 Develop/select, implement, and evaluate programs (for example, flexible work arrangements, diversity initiatives, repatriation) to meet the unique needs of employees.

Knowledge of:
27 Training program development techniques to create general and specialized training programs.
28 Training methods, facilitation techniques, instructional methods, and program delivery mechanisms.
29 Task/process analysis.
30 Performance appraisal methods (for example, instruments, ranking and rating scales).
31 Performance management methods (for example, goal setting, job rotations, promotions).

CORE KNOWLEDGE REQUIRED BY HR PROFESSIONALS
69 Needs assessment and analysis.
73 Adult learning processes.
74 Motivation concepts and applications.
75 Training techniques (for example, computer based, classroom, on-the-job).
84 Job analysis and job description methods.
89 Methods for assessing employee attitudes, opinions, and satisfaction (for example, opinion surveys, attitude surveys, focus groups/panels).

Appendix K

Lean Leader Pilot Participation Request

Lean Leader Pilot Participation Request

The following e-mail will be sent to IIE lean division members e-mail address if the newsletter survey participation rate is low.

SUBJECT: Do you fit your job or does the job fit you? - Doctoral research survey participation request

Your knowledge as a professional lean leader will be of great value to my research project. I am a doctoral student and my dissertation research project uses a survey instrument to collect data focused on lean leader job design. The dissertation project is titled: "Closing the Job Specification and Incumbent Person-Job Fit Gaps by Customizing Job Descriptions."

Please help me improve the meaningfulness of this project by participating in this job design survey pilot study. The survey responses will be anonymous. A summary of the study results will be published on the Institute of Industrial Engineers (IIE) lean division community web site. Your participation is voluntary. This survey and my research protocol have been approved by the Western Michigan University Human Subjects Institutional Review Board.

The research project purpose is to measure and better understand the relationship between a lean leader's job design, job satisfaction and job effectiveness. The knowledge gained is expected to better understand the key components of a lean leader's job, the effect of customizing a job to better fit the jobholder, and to generalize the conclusions for other knowledge workers with non-routine tasks.

Please participate in my doctoral research project by completing the survey accessed through the web link (URL LINK). The survey should take 20 minutes to complete.

Thank you

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Appendix L

Task Assignment Tool Worksheet

Task Priority Number	Job Description:							JD-A			JD-A			JD-A			JD-B			JD-B		
	Position Description:							PD-1			PD-2			PD-3			PD-4			PD-5		
	Performance (A,B,C):							A		1.0	A		1.0	C		0.0	B		0.5	C		0.0
	Promotobility (1,2,3):							1		1.0	3		0.0	2		0.5	2		0.5	2		0.5
	Preferred Behavior:							D			I			C			C			S		
	Ideal Routine (R) %:							25%			25%			10%			50%			90%		
	Ideal Problem Solve (PS) %:							25%			35%			10%			10%			5%		
	Ideal Project (PR) %:							50%			40%			80%			40%			5%		
	Grade:							10			10			10			8			8		
	Core Task Hours / Week & σ^2:						Fixed	20.0	2.1		20.0	3.0		15.0	1.9		20.0	1.5		18.0	2.0	
	Admin. Task Hours / Week & σ^2:						Fixed	5.0	0.9		6.00	0.8		6.00	0.5		6.00	0.3		6.00	0.9	
	Fixed Routine %:							50%			40%			20%			0.8			80%		
	Fixed Problem Solve %:							20%			30%			10%			0.1			10%		
	Fixed Project %:							30%			30%			70%			0.1			10%		
	Task Description	Grade	< Gr ?	Split?	Backup?	TQ	DISC	Who?	JD-A PD-1			JD-A PD-2			JD-A PD-3			JD-B PD-4			JD-B PD-5		
									8.0	σ^2		7.0	σ^2		19.0	σ^2		14.0	σ^2		16.0	σ^2	
1	Facilitate Improvement Meetir	10	Y	Y	Y	PS	I	8.9			8.5			8.9			6.4			5.0			0.0
2	Manage Project "A"	10	Y	Y	N	PR	D		7	0.22	9.4	7	0.22	7.5			4.4			4.5			0.0
3	Fulfill Computer Repair Work	10	N	Y	Y	PS	C	8.5			8.5			6.0			6.0			0.0			0.0
4	Record & Schedule New Orde	8	N	Y	N	R	C	6.5			5.1			3.7			4.3			6.0			6.5
5	Design Concepts for Quotes	10	N	Y	N	PR	I	8.5			8.0			8.5			7.4			0.0			0.0
6	Enter Routings	8	Y	Y	Y	R	C	7.1			7.1			4.1			5.0			5.9			3.5
7	Guide Tours	8	N	Y	Y	R	I	8.5			4.9			8.5			5.9			6.9			5.1
8	Generate Reports	10	Y	Y	N	R	C	7.0			7.0			5.7			6.0			5.9			0.0
9	Safety Audit	10	N	Y	Y	R	S	7.0			5.5			7.0			5.0			0.0			0.0
10	Answer Phone Questions or R	8	N	Y	Y	R	S	6.6			4.0			4.6			4.6			6.6			6.1
11	Task 11	0	0	0	0	0	0				0.0			0.0			0.0			0.0			0.0
12	Task 12	0	0	0	0	0	0				0.0			0.0			0.0			0.0			0.0
50	Task 50	0	0	0	0	0	0				0.0			0.0			0.0			0.0			0.0
	Flex Task Hours / Week & σ^2:								7	0.22		7	0.22		0	0		0	0		0	0	
	Fixed Task Hours / Week & σ^2:								25	3.0		26	3.8		21	2.4		26	1.8		24	2.9	
	Total Task Hrs / Wk, σ^2 & Std. Dev. (σ)								32	3.2	1.8	33	4.0	2.0	21	2.4	1.5	26	1.8	1.3	24	2.9	1.7
	Planned Routine (R) %:								39%			32%			20%			80%			80%		
	Planned Problem Solve (PS) %:								16%			24%			10%			10%			10%		
	Planned Project (PR) %:								45%			45%			70%			10%			10%		
	Legend: Blue=too low; Green= +/-								25%	; Red=too high													
	Planned Routine Hr:								0			0			0			0			0		
	Planned Problem Solve Hr:								0			0			0			0			0		
	Planned Project Hr:								7			7			0			0			0		
	Max. Hours / Week =								40														

Fixed Hrs / Wk	Fixed Hrs σ^2	
93.0	10.5	
29.1	3.4	
10.2%		= Total Fixed R
4.1%		= Total Fixed PS
6.1%		= Total Fixed PR

Assign Hours	Task Time Hr/Wk Estimate Mean	σ^2	p	m	o
0	2.1	0.1	3	2	1.5
14	14.0	0.4	16	14	12
0	10.2	10.0	20	10	1
0	8.3	1.0	12	8	6
0	13.0	9.0	24	12	6
0	8.0	1.8	12	8	4
0	3.0	1.0	6	3	0
0	3.0	0.1	4	3	2
0	1.1	0.1	2	1	0.5
0	8.0	1.8	12	8	4
0	0.0	0.0	0	0	0
0	0.0	0.0	0	0	0
0	0.0	0.0	0	0	0
14					
122.1	13.9				
136.1	14.3	3.8			
9%					
4%					
16%					
0					
0					
14					

Criteria Coefficients (β#)			Range	
#	Criteria	β#	Hi	Lo
1	Ability	1	2	0
2	Career Plan Fit	0.8	2	0
3	DISC Match	1	2	0
4	Grade Match	1	2	0
5	Knowledge Fit	1	2	0
6	Performance (A,B,C)	1	1	0
7	Preference Fit	1.2	1	0
8	Promotability	1	1	0
9	Skills Fit	1	2	0
10	Task Quotient Fit	1	2	0
11	Training Status	1	2	0
	Maximum Score =		18.8	

Scenario Name

Avg. Assigned API# =	8.5
Preference Wgt. Avg. =	1.50

Scenario Date: 7/3/08

Note: Shaded fields updated by manager who assigns general & flex tasks. Numbers in italics are task assignment priorities. "Ctrl a" records scenario in Scenarios worksheet. "Ctrl r" refreshes the Scenario worksheet.

Appendix M

Job Description – Lean Leader

JOB DESCRIPTION

Title: Lean Leader
Job Grade: ##
Date Prepared/Revised: April 23, 2008

JD Ref. Number: _____
Pay Status: Salary
Approved by: _____

JOB SUMMARY

The Lean Leader has a broad set of responsibilities that includes leadership for the overall operation and continuous improvement of value streams. The position will lead and sustain the lean transformation by administering continuous improvement activities, providing hands-on technical support, and driving necessary cultural change. The position will also train and facilitate personnel use of the tools and processes necessary to implement Lean methodologies throughout the organization.

ORGANIZATIONAL RELATIONS

Reports to Vice President of Operations. Direct reports include engineer(s), trainer(s) and or coordinator(s). Indirectly responsible for cross-functional and functional improvement teams. Customers include suppliers, all departments within the organization, distribution network, management at all levels, and end-user customers.

ESSENTIAL FUNCTIONS

Strategic Vision: Develop and recommend a strategic vision for a lean process that will drive radical change and continual improvement.

Coach: Coach and counsel the leadership team and workforce in the vision, values, and lean processes.

Communication: Use and continually improve communication tools to foster the Lean environment and culture.

Lean Assessment: Conduct a structured, organization wide lean assessment from the customer backwards to identify and measure gaps.

Value Stream Definition: Understand and document the current value stream flow of information and material for each product group. Define future states.

Future State Improvement Plan: Develop targeted improvement plans using projects, and high impacting Kaizen activities.

Performance Management: Develop annual improvement priorities, key performance indicators, and measurements. Track and validate improvements using performance metrics for Lean processes that supports business strategies and goals.

Knowledge: Continually improve understanding of lean systems, processes and tools and spread that knowledge throughout the organization.

Training: Define learning needs and develop training plans. Develop training material and train targeted personnel to apply Lean manufacturing tools that includes: 5-S, Data Collection and Analysis, Value Stream Mapping, Kaizen events, SMED, OEE, Standard Work, 8D and problem solving tools.

Facilitate: Facilitate improvement teams, continuous improvement and Kaizen intervention projects.

Manage Improvement Projects: Identify, prioritize, initiate, coordinate, manage, and support change implementation.

Audit Results: Assess the actual process performance and financial impact of improvement activities. Communicate the impact.

Benchmark: Compare measured process performance with relevant competitors and the industry's best in class. Facilitate the sharing of best practices.

Supervise Direct Reports

JOB REQUIRMENTS AND QUALIFICATIONS:

Education: B.S. Degree in Engineering (Technical and advanced degree preferred)

Experience: Five to seven years of proven track record of implementing business and operational improvement supported by Lean manufacturing techniques.

Lean Knowledge: Specialized knowledge in the principles, practices, and implementation of Lean principles and methods.

Facilitating & Teaching: Successfully facilitated project teams ranging in size from four to twenty people and effectively taught lean training materials.

Project Management: Extensive project management experience that includes working with suppliers, customers and management at all levels.

Communication: Excellent verbal and written communication skills.

Appendix N

Position Description – Lean Leader

POSITION DESCRIPTION

Position Description: Lean Leader
Job Description: Lean Leader – Operations
Department or Location: Operations
Job Grade: 18
Date Prepared/Revised: April 23, 2008

JD Ref. Number: _____
PD Ref. Number: _____

Pay Status: Salary
Approved by: _____

JOB SUMMARY

The Lean Leader has a broad set of responsibilities that includes leadership for the overall operation and continuous improvement of value streams. The position will lead and sustain the lean transformation by administering continuous improvement activities, providing hands-on technical support, and driving necessary cultural change. The position will also train and facilitate personnel use of the tools and processes necessary to implement Lean methodologies throughout the organization.

ORGANIZATIONAL RELATIONS

Reports to Vice President of Operations. Direct reports include engineer(s), trainer(s) and or coordinator(s). Indirectly responsible for cross-functional and functional improvement teams. Customers include suppliers, all departments within the organization, distribution network, management at all levels, and end-user customers.

ESSENTIAL FUNCTIONS	(% Time)
<u>Planned Work:</u>	
Supervise Direct Reports:	(7-10%)
Strategic Vision: Develop and recommend a strategic vision for a lean process that will drive radical change and continual improvement.	(4-6%)
Lean Assessment: Conduct a structured, organization wide lean assessment from the customer backwards to identify and measure gaps.	(5-8%)
Value Stream Definition: Understand and document the current value stream flow of information and material. Define the future state.	(5-8%)
Future State Improvement Plan: Develop targeted improvement plans using projects, and high impacting Kaizen activities.	(5-8%)

Facilitate: Facilitate improvement teams and continuous improvement Kaizen intervention projects. (10-15%)

Manage Improvement Projects: Identify, prioritize, initiate, coordinate, manage, support implementation (10-15%)

Temporary Work:
Coach: Coach and counsel the leadership team and workforce in the vision, values, and lean processes necessary for acceptance or "buy-in". Emphasize the design of continuous product flow, the use of pull systems where flow is not currently possible, and the leveling of the workload. (2-3%)

Communication: Develop and implement communication tools to foster the Lean environment and culture. (4-6%)

Knowledge: Develop a thorough understanding of lean systems, processes and tools and spread that knowledge throughout the organization in an intentional and written process. (3-5%)

Performance Management: Develop and implement performance metrics for Lean processes that supports business strategies and goals. Develop annual improvement priorities, key performance indicators, and measurements. Track and validate improvements. (8-10%)

Training: Define learning needs and develop training plans. Develop training material and train targeted personnel to apply Lean manufacturing tools that includes: 5-S, Data Collection and Analysis, Value Stream Mapping, Kaizen events, SMED, OEE, Standard Work, 8D and problem solving tools. (10-15%)

Audit Results: Assess the actual process performance and financial impact of improvement activities. Communicate the impact. (5-7%)

Benchmark: Compare measured process performance with relevant competitors and the industry's best in class. Facilitate the sharing of best practices. (3-5%)

Semi-Work Activities: Administrative tasks, meetings, travel, socialization, delays, and personal activities. (5-7%)

Unplanned-Work Activities:
- Self-initiated (3-5%)
- Directives from others (5-7%)
- Unexpected problems (3-5%)

Appendix O

Task Assignment Process Example

Task Assignment Process Example

				Responsibility				Time- Days	
Step No.	Activity #	Step Description	Activities	Manager	Performer	Group	Facilitator	Elapsed	Labor ~5 jobs
1		Plan and Communicate Position Description Task Assignment							
	a	Plan	Task assignment process, roles & responsibilities.	2			1	2	0.5
	b	Communicate	Meet to confirm purpose, roles, responsibilities and timing.	2	1	1	2	1	1
2		Identify Tasks							
	a	List	List tasks performed beginning with active verb.		2			3	0.5
	b	Consensus	Task list consensus. Content, scope and descriptions.	2	1			2	0.75
	c	Identify	Tasks as primarily routine, problem solving, or project (TQ).	2	1				
	c	Identify	Tasks that may be flexibly reassigned. (flex tasks)	2	1				
	d	Validate	Meet to define tasks and ability to reassign.	2	1	1	1	1	1
3		Collect Current Task Time Data							
	a	Record	Time to perform task over a representative period (~1 wk.)		2		1	5	0.5
	b	Estimate	Average time required for infrequently occurring activities.	1	2			2	1
	c	Load	Load task time results in worksheet.		2				
4		Load Task Assignment Tool Data							
	a	Load	Desire expressed by person for each flex task.	2				Performed concurrently with Record Task Time Activities	0.05
	b	Load	Grade reassignment limitations & TQ assignment.	2					0.05
	c	Load	Performance (A,B,C) & promotability (1,2,3) ratings/person	2					0.05
	d	Assess & Load	Development plan for each person related flex tasks.	2					0.1
	e	Assess & Load	Flex tasks performed better with a preferred behavior type.	2					0.1
	f	Assess & Load	Flex tasks that might be assigned to multiple persons.	2					0.1
	g	Assess & Load	Tasks requiring current labor grade or higher.	2					0.05
	h	Assess & Load	Knowledge fit for each employee & flex task combination.	2					0.1
	i	Assess & Load	Primary preferred behavior type (DISC) per person & task.	2					0.1
	j	Assess & Load	Skills fit for each employee & flex task combination.	2					0.1
	k	Assess & Load	Training matrix data/person & flex task combination.	2					0.1
5		Improve Task Design							
		Eliminate Waste	Eliminate, combine, reduce, or redesign tasks.	2	1	1	1	1	2
		Standardize	Best methods for similar "key" tasks.	2	1	1	1		
		Level Load	Schedule, prioritize or increase flexibility to respond.	2	1	1	1		
		Increase Capacity	Identify backups and manage with training matrix.	2	1	1	1		
6		Load Task Time Data into Spreadsheet							
	a	Load	Task time data/person into Task Assignment Tool.	2				1	0.2
	b	Assess & Load	Task time data (quality and reconcile variation)	2					0.2
	c	Validate	Test task assignment tool functionality and validity.	2			1		0.2
7		Develop Task Assignment Scenarios							
	a	Use Tool	Assign tasks/person following heuristic(s), record scenarios.	2				1	0.1
	b	Use Tool	Develop alternative scenarios based on non-modeled factors.	2					0.2
8		Task Assignment to Positions / People							
	a	Plan	Plan task assignment assessment meeting. Decide between combination of 1-on-1 and/or group meetings.	2			1	1	0.3
	b	Consensus	Meet to evaluate and propose alternative task assignments.	2	1	1	1	1	1
9		Document Task Assignments							
	a	Update	Task assignment matrix					1	0.3
	b	Update	Position descriptions					1	1
			Total Days:					23	11.7

Note: Number 2 assignment indicates a primary responsibility

Appendix P

Person-Job Fit Versus Updated Job Description

Kruskal-Wallis Test: PJFit versus JDUpdated

```
110 cases were used       118 cases contained missing values

Kruskal-Wallis Test on PJFit

JDUpdated    N  Median  Ave Rank      Z
1           50   5.938      62.7   2.16
2           60   5.750      49.5  -2.16
Overall    110              55.5

H = 4.67  DF = 1  P = 0.031
H = 4.69  DF = 1  P = 0.030  (adjusted for ties)
```

Kruskal-Wallis Test: DAFit versus JDUpdated

```
112 cases were used       116 cases contained missing values

Kruskal-Wallis Test on DAFit

JDUpdated    N  Median  Ave Rank      Z
1           52   6.000      61.4   1.49
2           60   6.000      52.2  -1.49
Overall    112              56.5

H = 2.23  DF = 1  P = 0.135
H = 2.31  DF = 1  P = 0.128  (adjusted for ties)
```

Kruskal-Wallis Test: NSFit versus JDUpdated

```
113 cases were used       115 cases contained missing values

Kruskal-Wallis Test on NSFit

JDUpdated    N  Median  Ave Rank      Z
1           52   6.000      66.0   2.69
2           61   5.333      49.3  -2.69
Overall    113              57.0

H = 7.25  DF = 1  P = 0.007
H = 7.36  DF = 1  P = 0.007  (adjusted for ties)
```

Kruskal-Wallis Test: SCJFit versus JDUpdated

```
111 cases were used       117 cases contained missing values

Kruskal-Wallis Test on SCJFit

JDUpdated    N  Median  Ave Rank      Z
1           50   6.000      60.9   1.44
2           61   6.000      52.0  -1.44
Overall    111              56.0

H = 2.07  DF = 1  P = 0.151
H = 2.21  DF = 1  P = 0.137  (adjusted for ties)
```

Test for Equal Variances: PJFit versus JDUpdated

```
95% Bonferroni confidence intervals for standard deviations

JDUpdated    N     Lower    StDev    Upper
        1   50  0.518034  0.64434  0.84525
        2   60  0.649433  0.79368  1.01369
        *  105  0.876204  1.02259  1.22353

Bartlett's Test (Normal Distribution)
Test statistic = 14.07, p-value = 0.001

Levene's Test (Any Continuous Distribution)
Test statistic = 4.99, p-value = 0.008
```

Two-Sample T-Test and CI: PJFit, JDUpdated

```
JDUpdated   N   Mean  StDev  SE Mean
1          50  5.900  0.644    0.091
2          60  5.552  0.794     0.10

Difference = mu (1) - mu (2)
Estimate for difference:  0.348
95% CI for difference:  (0.076, 0.620)
T-Test of difference = 0 (vs not =): T-Value = 2.54  P-Value = 0.013  DF = 107
```

Two-Sample T-Test and CI: DAFit, JDUpdated

```
JDUpdated   N   Mean  StDev  SE Mean
1          52  5.942  0.791     0.11
2          60  5.678  0.898     0.12

Difference = mu (1) - mu (2)
Estimate for difference:  0.265
95% CI for difference:  (-0.052, 0.581)
T-Test of difference = 0 (vs not =): T-Value = 1.66  P-Value = 0.100  DF = 109
```

Two-Sample T-Test and CI: NSFit, JDUpdated

```
JDUpdated   N   Mean  StDev  SE Mean
1          52  5.769  0.796     0.11
2          61   5.20   1.16     0.15

Difference = mu (1) - mu (2)
Estimate for difference:  0.567
95% CI for difference:  (0.201, 0.933)
T-Test of difference = 0 (vs not =): T-Value = 3.07  P-Value = 0.003  DF = 106
```

Two-Sample T-Test and CI: SCJFit, JDUpdated

```
JDUpdated   N   Mean  StDev  SE Mean
1          50  6.090  0.668    0.094
2          61  5.885  0.673    0.086

Difference = mu (1) - mu (2)
Estimate for difference:  0.205
95% CI for difference:  (-0.049, 0.458)
T-Test of difference = 0 (vs not =): T-Value = 1.60  P-Value = 0.112  DF = 105
```

Appendix Q

Person-Job Fit Versus Preferred Behavior (DiSC)

Kruskal-Wallis Test: PJFit versus DiSC

```
200 cases were used              28 cases contained missing values

DiSC       N  Median  Ave Rank      Z
C         55   5.250      79.4  -3.18
D         37   5.750     106.0   0.64
I         54   5.750     112.3   1.76
S         54   5.750     106.4   0.88
Overall  200             100.5

H = 10.49  DF = 3  P = 0.015
H = 10.53  DF = 3  P = 0.015  (adjusted for ties)
```

Kruskal-Wallis Test: NSFit versus DiSC

```
208 cases were used              20 cases contained missing values

DiSC       N  Median  Ave Rank      Z
C         56   5.000      78.7  -3.75
D         40   5.500     109.1   0.53
I         56   5.667     119.2   2.14
S         56   5.500     112.3   1.13
Overall  208             104.5

H = 14.78  DF = 3  P = 0.002
H = 14.94  DF = 3  P = 0.002  (adjusted for ties)
```

Kruskal-Wallis Test: DAFit versus DiSC

```
210 cases were used              18 cases contained missing values

DiSC       N  Median  Ave Rank      Z
C         56   5.667      89.4  -2.31
D         41   6.000     121.4   1.87
I         58   6.000     107.1   0.24
S         55   6.000     108.3   0.40
Overall  210             105.5

H = 6.89  DF = 3  P = 0.076
H = 7.09  DF = 3  P = 0.069  (adjusted for ties)
```

Kruskal-Wallis Test: SCJFit versus DiSC

```
202 cases were used       26 cases contained missing values

DiSC       N  Median  Ave Rank      Z
C         55   6.000      96.6  -0.74
D         37   6.000      99.7  -0.20
I         55   6.000     107.0   0.82
S         55   6.000     102.1   0.09
Overall  202             101.5

H = 0.93  DF = 3  P = 0.819
H = 0.99  DF = 3  P = 0.804  (adjusted for ties)
```

Appendix R

Customized Job Versus Preferred Behavior (DiSC)

Kruskal-Wallis Test: CustJob versus DiSC

```
208 cases were used
20 cases contained missing values


Kruskal-Wallis Test on CustJob

DiSC       N  Median  Ave Rank      Z
C         55   5.000     109.3   0.69
D         40   4.000      83.4  -2.47
I         57   5.000     116.2   1.73
S         56   5.000     102.9  -0.23
Overall  208             104.5

H = 7.48  DF = 3  P = 0.058
H = 7.57  DF = 3  P = 0.056  (adjusted for ties)
```

Two-Sample T-Test and CI: CustJob_D, CustJob_I

```
Two-sample T for CustJob_D vs CustJob_I

            N  Mean  StDev  SE Mean
CustJob_D  40  4.05   1.51     0.24
CustJob_I  57  4.89   1.53     0.20


Difference = mu (CustJob_D) - mu (CustJob_I)
Estimate for difference:  -0.836
95% CI for difference:  (-1.458, -0.214)
T-Test of difference = 0 (vs not =): T-Value = -2.67  P-Value = 0.009  DF = 84
```

Two-Sample T-Test and CI: CustJob_C, CustJob_D

```
Two-sample T for CustJob_C vs CustJob_D

            N  Mean  StDev  SE Mean
CustJob_C  55  4.64   1.66     0.22
CustJob_D  40  4.05   1.51     0.24


Difference = mu (CustJob_C) - mu (CustJob_D)
Estimate for difference:  0.586
90% CI for difference:  (0.043, 1.129)
T-Test of difference = 0 (vs not =): T-Value = 1.79  P-Value = 0.076  DF = 88
```

Appendix S

Graduate Student Feedback

Graduate Student Feedback

1) Q56: How many people work in the organization(s) that your job typically interacts with?
   a) FEEDBACK:
      i) Awkward wording
      ii) My organization or other organizations?
   b) DECISION:
      i) The full range of options were selected so the question will be reworded to *"How many people did you interact with while performing your job within the last 6 months?"*

2) Q21. How would you feel if your current job description is a listing of job responsibilities common to most lean leaders?; (Choose one best answer)
   a) FEEDBACK:
      i) Not sure what this questions means or how to help you.
      ii) 75% of people chose the neutral response.
   b) DECISION:
      i) Most of the graduate students were not lean leaders and did not understand what it meant.
      ii) No change given that the lean leader and youth leader questions were written specifically for them.

Other Survey Changes: The expected time to complete the survey was changed from 20 minutes to 15 minutes and the HSIRB approval and expiration dates were added to the introduction. However, the expected response time was changed back to 20 minutes following the lean leader and youth leader survey reviews.

All Relevant Comments:

1) Some of my current job tasks, roles or responsibilities have been changed or reassigned to better ...
   a) My area of responsibilities have been defined based on my core competencies.
   b) I started as an entry level engineer. I think it would be safe to say that ALL entry-level positions would have changed from the original tasks, roles, etc. over 3-4 years. I think this could be re-worded to better capture what you're trying to get from the question.

2) How would you feel if your responsibilities were matched to your core competencies?
   a) I feel this is the same question as before.

3) Do you have an estimate of the expected amount of your time to allocate to each task included in ...
   a) Question is irrelevant. It is up to the individual to manage their time and accomplish tasks accordingly.

4) How frequently do you review your job description?
   a) How often do you meet to review your performance against expectations.

5) My abilities and training are a good fit with the requirements of my job.
   a) □ Yes or no.

6) Considering all aspects of my job, my overall level of job satisfaction is ..."
   a) My overall satisfaction is based partially on compensation aspects of my job. I compartmentalize job satisfaction between internal rewards from the job and compensation from my employer. It's an assumption that "all aspects" includes both.

7) "I would prefer another job to the one I have now.
   a) If I am satisfied with my current job, that doesn't necessarily mean I would not be satisfied with another.

8) "Which level of job demands do you feel capable of performing in the future?
   a) Depends somewhat on what is meant by top level jobs.

9) "The attributes that I look for in a job are fulfilled very well by my present job.
   a) I didn't and still don't have a predefined model for the perfect job. Life consists of unplanned opportunities which contribute to job satisfaction. So my answer of less than strong agreement doesn't mean my job is lacking in this way.

10) The match is very good between the demands of my job and my personal skills
   a) Yes, in that the demands are related to my level of skill.

11) My personal values match the organization values and culture.
   a) Spelling error (Was corrected)

12) The things I value in life are very similar to the things my organization values.
   a) These are similar questions I guess but with different responses

13) How many people work in the organization(s) that your job typically interacts with?
   a) my organization or other organizations

   b) awkward wording
      i) **(**Question Reworded: *"How many people did you interact with while performing your job within the last 6 months?"* The youth leader question is "How many people attend your youth activities on a typical week.

Appendix T

Lean Leader and Youth Leader Feedback

Lean Leader and Youth Leader Feedback

Four lean leaders and four youth leaders reviewed the survey with the researcher and provided comments. Frustration was confirmed with repeated questions with similar content that were designed to measure item reliability. The relatively long length of the survey was expected to reduce the response rate but they felt that it was reasonable given the study objectives. They agreed that tasks to be assessed by task type were common and the task descriptions were clear. The expected time to complete the survey was returned to 20 minutes based on the feedback from the two groups.

Common Feedback	Lean Leader				Youth Leader			
	1	2	3	4	1	2	3	4
Frustration with repeated questions in different form.	X			X	X		X	
Length of Survey long but reasonable given objectives	X	X	X	X	X	X	X	X
Task descriptions were clear and common to the profession.	X	X	X	X	X	X	X	X

Appendix U

Task Assignment Tool Feedback Survey

Task Assignment Tool Feedback Survey

The Task Assignment Tool was developed by Bryan Booker from Western Michigan University's Department of Industrial & Manufacturing Engineering. This research is being conducted as part of the dissertation requirements for Bryan Booker.

Instructions: Please answer the following six questions which are expected to take approximately 2 minutes to complete. Your replies will be completely anonymous, so do not put your name anywhere on the forms. You may choose to not answer any question and simply leave it blank. Participation is voluntary. This consent document was approved by Western Michigan University's HSIRB on October 23, 2009. Do not participate after February 26, 2011. Completing the survey indicates your consent for use of the answers you supply. If you have any questions, you may contact Dr. Larry Mallak at 269-276-3369, Bryan Booker at 616-886-9222, the Human Subjects Institutional Review Board (269-387-8293) or the vice president for research (269-387-8298).

1. Which of the following describe your job. (Check all that apply)
   a) Lean Leader
   b) Youth Leader
   c) Process Improvement Leader
   d) Engineer
   e) Manager or Supervisor
   f) I Make Task Assignment Decisions
   g) If other, please specify

2. "I feel more CONFIDENT with the Task Assignment Tool predicted task performance RATINGS than my initial task performance rating."
   Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

3. "The Task Assignment Tool provided helpful INSIGHT regarding the task assignment decision."
   Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

4. "The Task Assignment Tool is a better PREDICTOR of task performance than methods I normally use."
   Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

5. "I would RECOMMEND using a knowledge worker task assignment tool as a decision making job aid if a similar tool was adopted by my organization."
   Strongly Disagree ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Strongly Agree

6. "Considering all aspects of this Task Assignment Tool, my overall SATISFACTION is …
   Very Dissatisfied ❍1 ❍ 2 ❍3 ❍4 ❍5 ❍ 6 ❍ 7 Very Satisfied

7. What changes to the Task Assignment Tool would you recommend?

Appendix V

Human Subject Institutional Review Board Approval

WESTERN MICHIGAN UNIVERSITY
Human Subjects Institutional Review Board

Date: February 26, 2009

To: Larry Mallak, Principal Investigator
Bryan Booker, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 09-02-35

This letter will serve as confirmation that your research project entitled "Closing the Job Specification and Incumbent Person-Job Fit Gaps by Customizing Job Descriptions" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: February 26, 2010

Walwood Hall, Kalamazoo, MI 49008-5456
PHONE: (269) 387-8293 FAX: (269) 387-8276

WESTERN MICHIGAN UNIVERSITY
Human Subjects Institutional Review Board

Date: March 29, 2010

To: Larry Mallak, Principal Investigator
Bryan Booker, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 09-02-35

This letter will serve as confirmation that the change to your research project entitled "Closing the Job Specification and Incumbent Person-Job Fit Gaps by Customizing Job Descriptions" requested in your memo dated 3/29/2010 (minor changes to task assignment tool and to email introducing the study; 6 question survey added) has been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

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Appendix W

Task Assignment Tool Improvement Feedback

Task Assignment Tool Responses to the Question:

What changes to the Task Assignment Tool would you recommend?

1. Better graphical presentation. More extensive definition of individual components of the items being measured in the tool.

2. Offer option for more people.

3. The entry of data into the tool is still dependent upon your overall feeling about the individuals. It may be a good idea to remove personal emotion from the data entry and base it upon prior employee performance reports or some other form of tangible data.

4. The tool was useful and not obtrusive. I did find myself favoring one candidate over another. That could cloud the results. I could see this expanded into a decision making tool. Kepner Tregoe has a Decision Analysis methodology that would fit this process very well. It was effective because it was simple. It was not comprehensive enough because it was simple. For simple decisions/assignments it works great.

5. Selection of questions with mutually exclusive answer choice. For example, loud speech, fast paced and assertive is not necessarily mutually exclusive with calm, slow paced, empathetic. The tool seemed to predict the lower rating better than higher rating.

6. More initial training on input factors. Use of examples and guidelines for input of these factors. With an initial run through, and "making it up" as I went, I was impressed with how well the result came out. This from just moving the input sliders to an approximate location based on "guesstimate" of the factor. However with better guidance on the input, it appears it could be a significant decision making tool.

7. I think its a great tool to be able to evaluate who is better at a task. This would be very helpful in management setting where multiple employees are being evaluated. If this tool was designed to tell me which person would be better at completing the task, then I believe it was valuable. I wish I could have asked someone questions regarding the results.

8. Somewhat confused as to the difference between skills and ability. These two terms seem the same to me and I found it too difficult to think about what their differences would be.

9. I think the interpretation of the output requires more explanation, though training or a tutorial.

10. I like the concept of this tool and I think it works well for a "one task-two person" situation. I wonder if it's feasible to expand the tool so a manager can store the behaviors, personalities, and ratings of skill, knowledge, and ability for all of his/her employees. Then, when a new task arrives, simply input a few specific details and have the tool assign the task to one person out of a group of maybe 5-10.

11. It did take a little longer than five minutes to complete the first time. But could be quickly done in the future.

Appendix X

Task Assignment Tool Variable Correlations Tables by Task Type

Task Assignment Tool Variable Correlations Tables by Task Type

Problem Solving Tasks

Factors	*Ability*	*Career Plan*	*Idea*	Know-ledge	*Preferred Behavior*	Plan	Positive Value	*Skill*	Take Charge	*Team*
Ability	1									
Career Plan	.255**	1								
Idea	0.067	0.187*	1							
Knowledge	.647***	.423***	.286**	1						
Preferred Behavior	0.083	0.014	-0.02	0.04	1					
Plan	0.065	0.08	0.01	0.103	-0.082	1				
Positive Value	0.035	0.113	.293***	0.112	0.104	0.041	1			
Skill	.591***	.428***	.174*	.737***	0.111	.216*	0.066	1		
Take Charge	-0.042	0.141	.327***	0.089	-0.021	.185*	.407***	0.081	1	
Team	0.003	.262**	.259**	.210*	-0.036	.200*	.182*	0.16	.174*	1
Task Performance	.521***	.408***	.187*	.665***	.166*	0.077	0.127	.697***	0.007	.197*

Project Tasks

Factors	*Ability*	Career Plan	Idea	*Know-ledge*	*Preferred Behavior*	*Plan*	*Positive Value*	Skill	*Take Charge*	Team
Ability	1									
Career Plan	.184*	1								
Idea	.208*	.214*	1							
Knowledge	.484***	.392***	.397***	1						
Preferred Behavior	0.153	0.106	0.057	0.016	1					
Plan	0.152	0.122	0.031	0.087	0.028	1				
Positive Value	0.075	-0.045	.337***	0.122	0.041	0.111	1			
Skill	.641***	.285**	.312***	.745***	0.131	0.08	.237**	1		
Take Charge	0.045	.176*	.347***	.216*	0.123	.239**	.339***	.227**	1	
Team	-0.025	.169*	.268**	.233**	0.025	.215*	.246**	.167*	.220*	1
Task Performance	.353***	.267**	.302**	.548***	0.137	.258**	.229**	.516***	.309***	.195*

Routine Tasks

Factors	*Ability*	Career Plan	Idea	Know-ledge	*Preferred Behavior*	*Plan*	Positive Value	*Skill*	*Take Charge*	*Team*
Ability	1									
Career Plan	.300***	1								
Idea	0.073	.171*	1							
Knowledge	.598***	.389***	0.162	1						
Preferred Behavior	0.047	0.038	-0.097	0.087	1					
Plan	.306***	.182*	0.02	.179*	0.043	1				
Positive Value	0.097	0.061	.335***	-0.096	-0.159	0.078	1			
Skill	.605***	.416***	.187*	.840***	0.03	.211*	0.04	1		
Take Charge	0.079	.212*	.339***	0.073	-0.029	.227**	.384***	0.092	1	
Team	0.039	.201*	.270**	.185*	-0.019	.225**	.220*	0.137	.216*	1
Task Performance	.477***	.251**	0.132	.560***	.219*	.285**	0.056	.630***	0.124	0.13

italic formatting indicates variables that were included in the tested task assignment tool.

Appendix Y

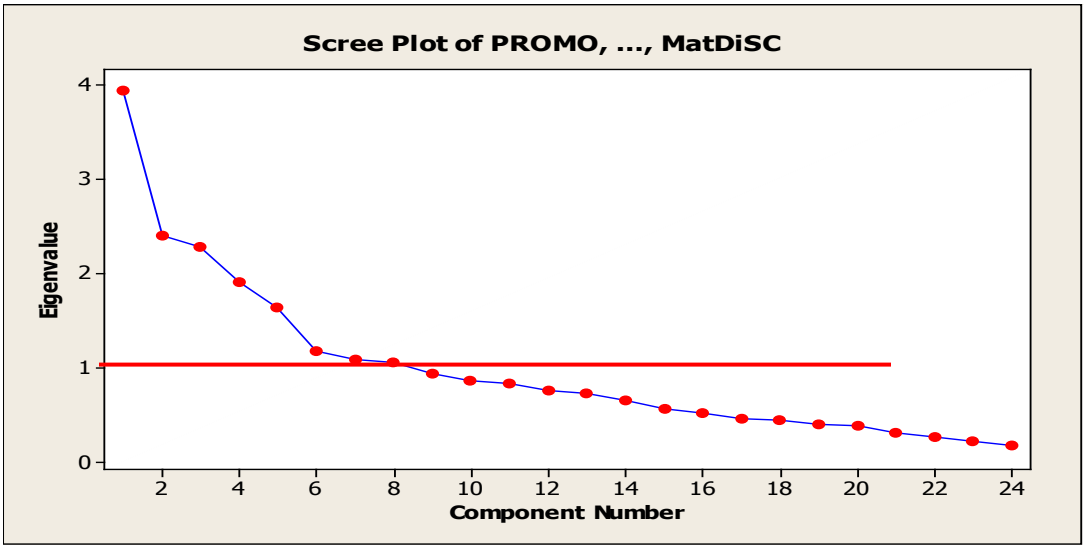
Principal Component Analysis

Principal Component Analysis

PC #	% Var.	Predictor Variables				
		1	2	3	4	5
1 Task	16.4	Knowledge Task 0.391	Skills Task 0.390	Training Task 0.383	Career Task 0.311	Abilities Task 0.303
2 Facts	10.0	Numbers Work Interest 0.478	Things Work Interest 0.375			
3 Team	9.5	Team Work Value 0.351	Help Others Work Interest 0.290	Take Charge Work Interest 0.285	Guidance Temperament 0.267	Get Along Work Value 0.211
4 Person-ality	7.9	Freedom Temperament 0.544	Independent Work Value 0.434	Positive Value Work Value 0.322	Ideas Temperament 0.277	Talk Learn Style 0.263
5 Study	6.9	Read Learn Style 0.614	Study Work Interest 0.363	Plan Temperament 0.214		
8 Match	4.4	Job Grade Task 0.389	Preferred Behavior Match Scale 0 to 1 0.577			

Table reports variable name and principal component coefficients

Scree Plot of Principal Components



Principal Component and Constituent Multiple Regression Comparison

Task Type	Variables	R-Sq	F	P-Value
Problem Solving	22	56.8	5.99	0.000
	6 Principal Components	49.1	18.61	0.000
Project	22 Independent	42.6	3.34	0.000
	6 Principal Components	32.7	9.31	0.000
Routine	22 Independent	49.7	4.44	0.000
	6 Principal Components	35.9	10.72	0.000

Dependent Variable: Task Performance

The six principal components explain less task performance variation than the 22 variable constituents of the six principal components.

Appendix Z

Variable Reduction Process Data – Step 3

Variable Reduction Process Data – Step 3

Problem Solving Task - Performance Independent Predictor Variables, $R^2 = 56.1$

Predictor	Coef.	SE Coef.	T	P-value
Constant	0.845	0.550	1.54	0.126
Task Skill	0.460	0.071	6.44	0.000
Task Ability	0.173	0.071	2.43	0.017
Career Plan Fit	0.103	0.057	1.81	0.073
Prefer Things	-0.048	0.032	-1.50	0.136
Prefer Help Others	**-0.022**	**0.052**	**-0.42**	**0.677**
Prefer Positive Value	0.044	0.054	0.82	0.413
Prefer Teams	0.066	0.058	1.15	0.252
Prefer Ideas	0.043	0.053	0.80	0.424
Preferred Behavior Fit	0.202	0.147	1.38	0.171

Bold font: 1st Variable reduced in step 3.

Problem Solving Task – Final Independent Predictor Variables, $R^2 = 55.2$

Predictor	Coef.	SE Coef.	T	P-Value	VIF
Constant	0.751	0.497	1.51	0.133	
Task Skill	0.458	0.070	6.50	0.000	1.78
Task Ability	0.182	0.071	2.57	0.011	1.53
Career Plan Fit	0.107	0.056	1.89	0.060	1.28
Prefer Team	0.055	0.052	1.05	0.297	1.15
Prefer Ideas	0.045	0.051	0.88	0.380	1.10
Preferred Behavior Fit	0.237	0.144	1.64	0.102	1.02

Eliminating Preferred Behavior Fit: $R^2 = 54.3$

Project Task - Performance Independent Predictor Variables, $R^2 = 42.9$

Predictor	Coef.	SE Coef.	T	P-value
Constant	0.107	0.804	0.13	0.894
Task Knowledge	0.536	0.107	5.00	0.000
Task Ability	0.113	0.092	1.23	0.220
Career Plan Fit	0.017	0.087	0.20	0.845
Prefer Take Charge	0.114	0.066	1.73	0.087
Prefer Help Others	-0.114	0.096	-1.18	0.241
Prefer Get Along	0.046	0.078	0.58	0.561
Prefer Positive Value	0.112	0.091	1.23	0.221
Prefer Team	0.037	0.094	0.39	0.698
Prefer Ideas	**0.001**	**0.089**	**0.06**	**0.954**
Prefer Plan	0.125	0.059	2.13	0.036
Preferred Behavior Fit	0.333	0.256	1.30	0.196

Bold font: 1st Variable reduced in step 3.

Project Task – Final Independent Predictor Variables, $R^2 = 42.0$

Predictor	Coef.	SE Coef.	T	P-Value	VIF
Constant	0.033	0.690	0.05	0.962	
Task Knowledge	0.550	0.091	6.06	0.000	1.29
Prefer Plan	0.121	0.056	2.16	0.033	1.10
Prefer Know Positive Value	0.115	0.084	1.37	0.174	1.13
Task Ability	0.109	0.088	1.24	0.217	1.29
Prefer Take Charge	0.095	0.061	1.57	0.119	1.24
Preferred Behavior Fit	*0.350*	*0.243*	*1.44*	*0.152*	*1.05*

Eliminating Preferred Behavior Fit: $R^2 = 41.0$

Routine Task - Performance Independent Predictor Variables, $R^2 = 46.9$

Predictor	Coef.	SE Coef.	T	P-value
Constant	0.355	0.706	0.50	0.616
Task Skill	0.638	0.106	6.04	0.000
Task Ability	0.135	0.091	1.49	0.138
Career Plan Fit	-0.068	0.074	-0.92	0.361
Prefer Take Charge	0.062	0.060	1.03	0.303
Prefer Help Others	-0.063	0.076	-0.83	0.408
Prefer Positive Value	0.041	0.079	0.51	0.608
Prefer Teams	0.069	0.080	0.86	0.390
Prefer Ideas	**-0.003**	**0.074**	**-0.04**	**0.970**
Prefer Plans	0.086	0.054	1.60	0.113
Preferred Behavior Fit	0.447	0.156	2.86	0.005

Bold font: 1st Variable reduced in step 3.

Routine Task – Final Independent Predictor Variables, $R^2 = 46.0$

Predictor	Coef.	SE Coef.	T	P-Value	VIF
Constant	0.359	0.603	0.60	0.553	
Task Skill	0.595	0.098	6.07	0.000	1.605
Task Ability	0.132	0.089	1.48	0.141	1.671
Prefer Plan	0.080	0.053	1.49	0.138	1.198
Preferred Behavior Fit	0.430	0.152	2.83	0.005	1.003
Prefer Take Charge	*0.054*	*0.052*	*1.03*	*0.304*	*1.088*
Prefer Teams	*0.039*	*0.068*	*0.57*	*0.568*	*1.107*

Eliminating Prefer Teams: $R^2 = 45.8$