



MEASURING JOB CHARACTERISTICS OF AGRICULTURAL EXTENSION CENTERS' PERSONNEL IN ASSIUT GOVERNORATE USING HACKMAN AND OLDHAM'S MODEL

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ABSTRACT

The purpose of this study is to measure the job characteristics of agricultural extension centers' personnel in Assiut governorate using Hackman and Oldham's Model, and to examine the model fit with the current study. The job diagnostic survey was used as the assessment tool to measure the components of the job characteristics model. Data were collected from all of the agricultural extension centers' personnel in Assiut governorate (84 personnel) by questionnaire. The job characteristics model's overall fit with the data was evaluated using common model goodness of fit measures estimated by AMOS. The results showed that dealing with others and feedback received the highest ratings; autonomy and skill variety received the lowest ratings from the core job characteristics. The moderate feelings towards the core job dimensions yielded a low motivating potential score. Knowledge of results yielded the highest rating and experienced responsibility yielded the lowest rating from the psychological states. Internal work motivation received the highest rating and growth satisfaction received the lowest rating from the personal/work outcomes. Stimulating work environment yielded the highest rating and pay satisfaction yielded the lowest rating from the moderators of the model. The various indices of overall goodness of fit for the model lent sufficient support for the results to be an acceptable representation of the job characteristics model.

INTRODUCTION

Work design is becoming increasingly prominent as a strategy for attempting to improve the

productivity and the quality of the work of employees in contemporary organizations (Hackman and Oldham, 1976: 250). Jobs must be designed in a way that they will be able to motivate employees (Alishiri, 2012: 259). Job enrichment and motivation in an organization have been the focus of attention for behavioral scientists since the early part of the twentieth century. As a result, the last century has produced an abundance of literature on job design and enrichment. Organizations have become aware of the effect job designs have on perceived working conditions, which is believed to shape employee motivation and satisfaction (Lawrence, 2001: 19).

The majority of research under the auspices of work design has centered on the job characteristics model developed by Hackman and Oldham (1974, 1975, 1976, and 1980). The job characteristics model applied in job design research provides a framework for understanding the extent to which individuals perceive their jobs to be motivating and satisfying by focusing on job characteristics (Kim et al 2009: 551). The last version of the job characteristics model suggests that five "core" job dimensions are seen as prompting three psychological states which, in turn, lead to a number of beneficial personal and work outcomes. The links between the job dimensions and the psychological states, and between the psychological states and the outcomes, are shown as moderated by three individual difference variables (Kulik et al 1987: 280).

Hackman and Oldham's job characteristic model had been used in extension education in a number of studies such as: the study conducted by Scott et al (2005) to determine extension agents' perceptions of fundamental job characteristics and

their level of job satisfaction in Mississippi; the study of **Furgason (1992)**, which was conducted to know about extension educators' perceptions of job dimensions and job satisfaction in Nebraska; and the study conducted by **Birnstihl (1987)** to recognize the influence of growth needs and psychological states on the relationship of job dimensions and job performance of extension agents of the Nebraska cooperative extension service.

Using Hackman and Oldham's job characteristic model, the purpose of this study is to measure the job characteristics of agricultural extension centers' personnel in Assiut governorate through investigating the perceptions that these employees hold towards their jobs, and to examine the model fit with the current study. The following section will discuss the job characteristics model and the job diagnostic survey, later, after methodology and results, conclusions are figured out.

LITERATURE REVIEW

The Job Characteristics Model

The job characteristics model is an attempt to extend, refine, and systematize the relationships between job characteristics and individual responses to the work (**Hackman and Oldham, 1976: 255**). This model is a conceptual framework proposed by **Hackman and Oldham (1974, 1975, 1976, and 1980)** that has served as the impetus for much research. The concept of job characteristics model focuses on designing a job so that it motivates a person (**Hadi and Adil, 2010: 294**). **Hackman and Oldham (1980: 4)** indicated that their purpose for creating the job characteristics model was based on the premise that organizational productivity is influenced by the quality of the relationship between people who do the work and the jobs they perform. The complete job characteristics model is presented in **Figure (1) (Hackman and Oldham, 1980: 90)**. At the most general level, five job dimensions (skill variety, task identity, task significance, autonomy, and feedback from job) influence three critical psychological states (experienced meaningfulness, experienced responsibility, and knowledge of results), which in turn, influence a number of personal and work outcomes (internal work motivation, growth satisfaction, general job satisfaction, and work effectiveness) with three of the proposed moderator variables (knowledge & skill, growth need strength, and context satisfaction) of both the job characteristics-critical psychological states relationships and the

critical psychological states- personal/work outcomes relationships.

Hackman and Oldham (1980: 78-81) proposed five core job characteristics that should be included in any job. These characteristics include; Skill variety: is the extent to which job includes tasks that require different skills and talents of the worker. Task identity: refers to the degree to which an employee completes a whole piece of work from beginning to the end with an identifiable outcome. Task significance: is defined as the impact that a job has on the lives or work of other people or organizations. Autonomy: stands for the control over the procedures to be used to complete tasks and the scheduling of them. Feedback: is the degree to which carrying out the work activities required by the job provides the employee with information about the effectiveness of his or her performance. The model states that the five core job characteristics can be combined into a single index of motivating potential score (MPS) that reflects the overall potential of a job to influence the individual's feelings and behaviors. A job high in motivating potential must be high on at least one of the three job characteristics that prompt experienced meaningfulness, and high on both autonomy and feedback, to create conditions which foster all three critical psychological states. The formula for the MPS is as follows:

$$\text{Motivating potential score} = \frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \times \text{Autonomy} \times \text{Job Feedback}$$

The model posits that all three of the psychological states must be experienced by an individual if desirable outcomes are to emerge. The three conditions they suggested are: (a) a person must experience the work as meaningful, as something which is generally valuable and worthwhile; (b) a person must experience responsibility for the results of the work, that is, he/she must feel personally accountable and responsible for the work results; (c) a person must have knowledge of the final results of the work being done, that is, he/she must understand the effectiveness of his/her job performance. If any one of these three states is not present, motivation and satisfaction will be attenuated (**Kulik et al 1987: 280-181**).

The model also proposes that the three critical psychological states are created by the presence of five "core" job dimensions. Experienced meaningfulness of the work is enhanced primarily by

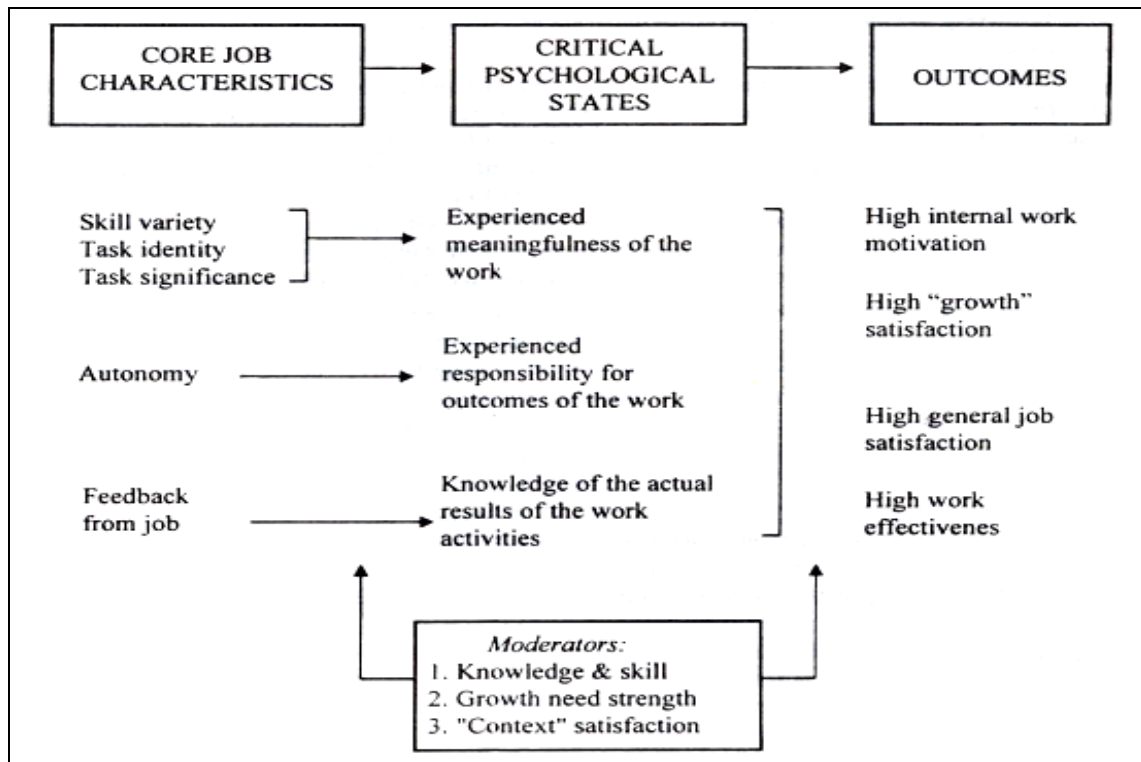


Figure 1. The job characteristics model (Hackman and Oldham, 1980: 90)

three of the core dimensions: skill variety, task identity, and task significance. Experienced responsibility for work outcomes is increased when a job has high autonomy. Knowledge of results is increased when a job is high on feedback (Renn and Vandenberg, 1995: 282).

There are also several outcome variables in the model that are predicted to result when the psychological states are present. These outcomes include internal work motivation, growth satisfaction, general satisfaction, and work effectiveness. Internal work motivation indicates an employee's satisfaction when performing well on the job because it is rewarding and satisfying to do so, thus serving as an incentive for continuing to do well. Growth satisfaction indicates employee satisfaction when employees have enriched opportunities for personal learning and growth at work. General satisfaction indicates employee satisfaction when employees indicate how satisfied they are with their jobs and how frequently they think of quitting their jobs. Finally, work effectiveness indicates an employee's satisfaction in both the quality and quantity of goods or services produced (Hackman and Oldham, 1980: 89-91; Kulik *et al* 1987: 281).

In addition to job characteristics, critical psychological states, and outcomes, the job characteristics model also attempts to account for individual differences in job incumbents' reactions to their jobs. These individual differences are conceptualized as the moderators. The moderators involved are knowledge and skill, growth need strength, and

"context" satisfactions. Knowledge and skill refers to the sufficient knowledge and skill that people have to perform well. Growth-need strength refers to the desire of the individual to obtain professional growth and achievement. Context satisfaction refers to how satisfied people are with aspects of the work context like job security, pay, co-workers, and supervision (Hackman and Oldham, 1980: 82-86).

The Job Diagnostic Survey

The principal assessment tool developed for measuring the components of the job characteristics model is the job diagnostic survey, which was intended (a) to diagnose existing jobs to determine if (and how) it might be redesigned to improve employee motivation and productivity, and (b) to evaluate the effects of job changes on employees. This instrument is taken by employees who work on any given job, and it is designed to be of use both in the diagnosis of jobs prior to their redesign, and in research and evaluation activities aimed at assessing the effects of redesigned jobs on the people who do them (Hackman and Oldham, 1975: 159-160).

The use of such an instrument to diagnose the motivational properties of jobs prior to redesign should help in increasing the capability to diagnose the motivational potential of jobs before they are changed, it will become possible for organizational change agents to more wisely plan and carry out job

redesign projects. Moreover, it also should facilitate efforts by behavioral scientists to understand how and why job enrichment works when it does work and what has gone wrong when it doesn't (Hackman and Oldham, 1974: 2).

The job diagnostic survey was constructed to provide separate measures of employees' perceptions of variables in the job characteristics model. Two concepts in the model are not assessed by the job diagnostic survey: The level of employee knowledge and skill, and employee work effectiveness. These factors are idiosyncratic to particular work settings, and therefore defy meaningful measurement across jobs and organizations. Also, two job characteristics that are not in the model are measured by the job diagnostic survey: feedback from agents and dealing with others. Feedback from agents is often useful in supplementing job diagnostic survey information on feedback from the job itself. Dealing with others reflects the extent to which the job requires work with other people, which can alert planners to the possibility that meaningful change may require attention to an interconnected set of jobs rather than to the single job that may have prompted the diagnosis (Hackman and Oldham, 1980: 103). The specific concepts measured in the job diagnostic survey are summarized in the following table:

Table 1. The specific concepts measured in the job diagnostic survey

Job characteristics	Critical psychological states	Outcomes	Moderators
1-Skill variety	1-Experienced meaningfulness	1-Internal work motivation	1-Individual growth need strength
2-Task identity	2-Experienced responsibility	2-Growth satisfaction	2-Context satisfaction
3-Task significance	3-Knowledge of results	3-General job satisfaction	
4-Autonomy			
5-Feedback from job			
6-Feedback from agents			
7-Dealing with others			

Source: Hackman and Oldham (1980)

METHODOLOGY

The purpose of this study is to measure the job characteristics of agricultural extension centers' personnel in Assiut governorate using Hackman

and Oldham's model through investigating the perceptions that these employees hold towards their jobs, and to examine the model fit with the current study. The job diagnostic survey developed and validated by Hackman and Oldham (1980: 275-294) was used in the current study as the assessment tool to measure the components of the job characteristics model as presented previously in Table (1). The job diagnostic survey is a non copyrighted instrument that can be used without permission of the authors. It consists of eighty-three items distributed randomly on seven sections, and asks subjects to respond in terms of their job according to their perceptions. All concepts in the survey are expressed on 7- point Likert scale, where 1 is low and seven is high. The score for each job dimension is determined by averaging the values of the appropriate items in different sections.

Data were collected from all of the agricultural extension centers' personnel in Assiut governorate (84 personnel) during December 2012 by questionnaire. Data analysis was carried out using SPSS (version 15). Data were presented by mean scores, and the reliability of the questionnaire (0.77) was estimated by Cronbach alpha.

To test the overall fit of the job characteristics model with the data, the study followed goodness of fit measures estimated by AMOS 18 (Arbuckle, 2007). Several indices were calculated to evaluate the fit of the model to the data by using the maximum likelihood Chi-square statistic provided in the Amos output and other fit indices such as the ratio of Chi-square to degrees of freedom, root mean square error of approximation (RMSEA), goodness of fit index (GFI), and normed fit index (NFI). Throughout the study, a model was considered to have a good fit if all the path coefficients were significant at 0.05 level, χ^2 insignificant, χ^2/df : <2, RMSEA was below 0.05 and GFI, NFI were greater than 0.9 (Lu et al 2007: 584)

RESULTS AND DISCUSSION

Core Job Characteristics and Motivating Potential Score

Table (2) presents mean scores for each of the core job dimensions. The scores were determined using a composite of two different Likert scales with a range of one to seven. The first scale, in section one of the survey, assessed the degree to which the job dimensions were present (1 = very little, 4 = moderate, 7 = very much). The second scale, in section two of the survey, assessed the accuracy of statements in describing the job (1 = very inaccurate, 4 = uncertain, 7 = very accurate).

As indicated in the table, mean scores for all dimensions were slightly higher than four, thus indicating a presence of the dimensions of job characteristics. The degree in which the job required a closely work with others (M = 5.47) and the provided feedback from agents (M = 5.18) received the highest agreement among respondents, while the respondents were neutral or uncertain regarding provided freedom in determining how the work was done (M = 4.17) and utilization of various skills and talents (M = 4.21).

Table 2. Means of the respondents' perceptions towards the core job characteristics

Job characteristics	Means
Skill variety	4.21
Task identity	4.63
Task significance	4.54
Autonomy	4.17
Feedback from job	4.96
Feedback from agents	5.18
Dealing with others	5.47

Source: Questionnaire forms

The Motivating potential score for the current study is 92.24 which is 26.89% of the maximum score (343) and indicating a relatively low MPS, which results from the moderate feelings towards the core job dimensions and indicates that respondents believe that their job is not highly motivating.

$$\text{Motivating potential score} = \frac{4.21+4.63+4.54}{3} \times 4.17 \times 4.96 = 92.24$$

Critical Psychological States

Mean scores for each of the critical psychological states are presented in **Table (3)**. Each of the three constructs are measured both directly (section three) and indirectly via projective - type items (section five). The scores were determined using a Likert scale with a range of one to seven (1 = disagree strongly, 4 = neutral, 7 = agree strongly). As indicated in the table, scores remained close to a neutral response for each psychological state. The respondents agreed most regarding their knowledge of how effective they are at the job (M = 5.39), while they were neutral or uncertain regarding their responsibility for the work results (M = 4.20) and the meaningfulness and significance of their job (M = 4.35).

Table 3. Means of the respondents' perceptions towards the critical psychological states

Critical psychological states	Means
Experienced meaningfulness	4.35
Experienced responsibility	4.20
Knowledge of results	5.39

Source: Questionnaire forms

Personal/Work Outcomes

Table (4) presents the mean scores for the respondents' views on the outcomes of their work. The scores were determined using a composite of two different Likert scales with a range of one to seven. The first scale, used in sections three and five of the survey, assessed internal work motivation and general job satisfaction (1 = disagree strongly, 4 = neutral, 7 = agree strongly). The second scale, in section four of the survey, assessed growth satisfactions (1 = extremely dissatisfied, 4 = neutral, 7 = extremely satisfied). As indicated in the table, scores for all personal/work outcomes suggesting a neutral to slight agreement or satisfaction response. The respondents adopted a favorable reaction to feel satisfied when performing well on the job (M = 5.56), while they felt neutral to slight dissatisfaction regarding the opportunity for personal learning and growth at work (M = 3.86) and to the general job satisfaction with a partly willingness of quitting their jobs (M = 4.08).

Table 4. Means of the respondents' perceptions toward the personal/work outcomes

Personal/work outcomes	Means
Internal work motivation	5.56
Growth satisfaction	3.86
General job satisfaction	4.08

Source: Questionnaire forms

Growth Need Strength and Context Satisfaction

Table (5) presents mean scores for the respondents' desire to obtain growth from their job and context satisfactions. Two separate scales labeled as "would like" and "job choice", assessed the individual growth need strength. The "would like" measure refers to how much respondents would prefer to have growth characteristics present in their job. The "job choice" measure refers to the type of job each respondent would prefer (one with or without growth characteristics). Once again, the scores were determined using two different Likert scales with a range of one to seven. The first

scale, in section six of the survey, assessed how much each respondent "would like" to have growth characteristics present in his job (1 = very little, 4 = moderate, 7 = very much). The second scale, in section seven of the survey, determined the type of job or "job choice" of each respondent (1 = strongly prefer "job A", 4 = neutral, and 7 = strongly prefer "job B"). The context satisfaction was assessed by a scale in section four of the survey (1 = extremely dissatisfied, 4 = neutral, 7 = extremely satisfied).

As indicated in the table, scores for both measures of growth ranged from neutral to high. The respondents felt most strongly about wanting a challenging and stimulating work environment that promoted creative and independent thought (M = 5.59). However, when asked to choose between a job with or without growth characteristics, the respondents were neutral as to the type of job characteristics they preferred (M = 4.05). On the other hand, the respondents' perceptions about the different aspects of the context satisfaction revealed that they responded most strongly to the degree to which they felt the job offered them encouraging relationships with colleagues (M = 5.01), while they felt dissatisfied regarding pay (M = 2.65) and they felt neutral to slight dissatisfaction regarding job security (M = 3.71) and supervision (M = 4.69).

Table 5. Means of the respondents' perceptions towards the growth need strength and context satisfaction

Moderators	Means
Individual growth need strength	
Would Like	5.59
Job Choice	4.05
Context satisfaction	
Job security	3.71
Pay	2.65
Co-workers	5.01
Supervision	4.69

Source: Questionnaire forms

The Job Characteristics Model's Overall Fit With the Current Study

The job characteristics model's overall fit with the data was evaluated using common model goodness of fit measures estimated by AMOS. The p-value of the Chi-square was 0.082, and it was statistically non-significant. This provides evidence of model fit as the observed data can represent adequately the job characteristics model. The normed Chi-square (χ^2/df) had a value of 1.687,

this falls well within the recommended range for conditional support to be given for model acceptance. Moreover, the goodness of fit index (GFI) and normed fit index (NFI) had values of 0.984 and 0.963, which are acceptable and provide further supporting for acceptance of the model. The root mean square error of approximation (RMSEA) was 0.023, which provide evidence of model fit. Overall, the various indices of overall goodness of fit advocated for the results to be an acceptable representation of the job characteristics model. According to **Table (6) and Fig. (2)**, the direct paths coefficients for the main aspects of the job characteristics model were all significant in the model directions. This indicates further evidence about a good fit model to the data in addition to the goodness of fit indices.

CONCLUSION

According to the achieved results, it can be noticed as predicted by the job characteristic model, that the respondents felt least strongly about their sense of work responsibility due to the weak autonomy experience in doing the job. It also became clear that the moderate feelings the respondents had toward the variety of skills needed to do the job, the opportunity to do a task from beginning to end, and the impact their work had on the lives of other people, all of which impact how meaningful they perceived their job to be, produced neutral feelings, thus contributing to their weaker sense of general job satisfaction. On the other hand, the respondents felt the occurrence of feedback the most of the core job dimensions that determines the motivating potential of the job. As a result, their feelings towards their understanding of how effective they are at the job were the strongest.

It appears that the extension centers are not involved with different activities requiring a variety of skills. This implies the need for exploring ways to create various tasks in an effort to improve the employees' involvement within the extension centers operations. The respondents felt least satisfied with pay, job security, supervision, and the opportunity for personal development. This indicates an urgent need for improving these conditions in order to enhance the respondents' satisfaction.

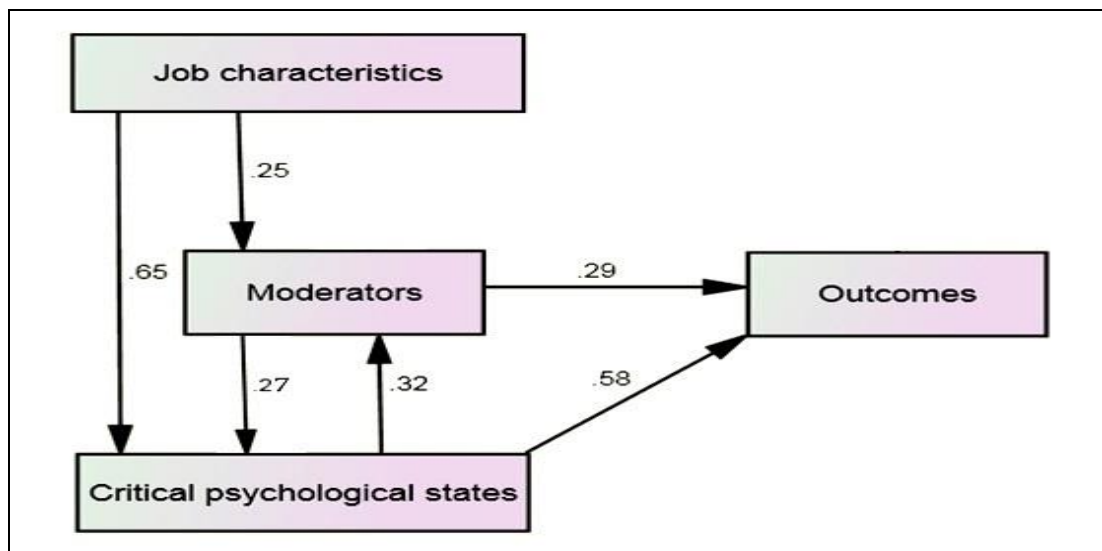
This study should be viewed as a contribution to the general understanding of extension personnel's perceptions by using the job characteristics model, particularly after the findings of this study had confirmed the legitimacy of the job characteristic model to be applied in the work environment of agricultural extension. However, despite convincing evidence in support of the job characteristic model, the use of this model as a tool to adequately measure extension personnel's perceptions in different governorates should be further researched as well. After all, this study can serve as

an aid to any further investigation into the agricultural extension work environment in Egypt.

Table 6: Direct paths coefficients for the main aspects of the job characteristics model

Direct paths		Coefficients
Job characteristics	→	Critical psychological states .651**
Critical psychological states	→	Outcomes .575**
Job characteristics	→	Moderators .245*
Moderators	→	Critical psychological states .269**
Critical psychological states	→	Moderators .315**
Moderators	→	Outcomes .290**

Source: Questionnaire forms
 * $P \leq 0.05$ ** $P \leq 0.01$

**Figure 2.** Direct paths coefficients for the main aspects of the job characteristics model.

Notes: $\chi^2 = 3.375$, $p = 0.182$, $\chi^2/df = 1.687$, RMSEA = 0.023, GFI = 0.984, NFI = 0.963

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