A Study of Motivation Using the Job Characteristics Model with Comparisons to U. S. and Non-U.S. Companies

Rickey Casey
Professor of Management and Business, and Associate Dean
Director of the Ph.D. and DBA Programs
School of Business, Economics, and Technology
Campbellsville University
Campbellsville, Kentucky
(479) 746-1879
rjcasey@campbellsville.edu

Robert Hilton
Assistant Professor of Management
The Robert W. Plaster College of Business
Missouri Southern State University
Joplin, Missouri
(417) 625-3578
hilton-r@mssu.edu

Thomas Schmidt
Professor of Marketing, and Associate Dean
The Robert W. Plaster College of Business
Missouri Southern State University
Joplin, Missouri
(417) 625-3544
schmidt-t@mssu.edu

Abstract

This study examines the impact of job complexities on employee motivation. Data collected were from convenience samples of companies and organizations within the United States, Mexico, Central America, and South America (N = 2,330 employees). The data were analyzed in two groups, eight U.S. companies (N = 700 employees) and twelve non-U.S. companies (N = 1,630 employees) using the Hackman and Oldham (1976) Job Characteristics Model. This study found a significant difference between the Motivating Potential Scores (MPS) of employees between the U. S. group of companies and the non-U.S. group. Cross-cultural differences may help to explain the findings. Future research should explore the variations between U.S. and Non-U.S. MPS measures among employees using models such as Hofstede's Cultural Dimension Theory.

Keywords: Job Characteristics Model, Hackman and Oldham, North America, Central America, and South America, industries, motivation dimensions, cultural differences, Hofstede's Cultural Dimension Theory.

Introduction

Practitioners essentially have two options to improve contribution margins. The first option is to increase prices; the second is to lower costs. The latter option often results in the unintended consequences of decreasing employee satisfaction, motivation, and morale. To address this issue, Hackman & Oldham (1976), building on Herzberg's two-factor theory (Herzberg, Mausner, & Synderman, 1959), with some theoretical foundations based on the expectancy theory (Evans, Kiggundu, & House, 1979) developed the Job Characteristics Model (JCM). Several studies (e.g., Ford, 1969; Lawler, 1973; Maher, 1971; Meyers, 1968; Special Task Force, HEW, 1973; Vroom, 1964) supported the theory of job redesign. Steers and Porter (1987) found that task redesign can (1) significantly reduce turnover and absenteeism, (2) improve job satisfaction, (3) improve product quality, and (4) improve productivity and output rates.

The JCM is one of the most studied theories in the discipline of organizational psychology (Muchinsky, 2006). That said, few studies have compared employee Motivating Potential Scores (MPS) among companies operating in the U.S. and other parts of the world. The purpose of this research is to assess the Job Characteristics Model and employee motivation by comparing Motivating Potential Scores (MPS) of employees in companies located in the United States with those located in Mexico, Central America, and South America. The significance of this research is that few empirical studies of this scope have examined the JCM. For comparison purposes, the MPS for all companies in this study were analyzed against those in the Hackman and Oldham database.

Review of the Literature

Several researchers (Walker, & Guest, 1952; Herzberg, 1966; Davis, 1957; Herzberg, Mausner, & Snyderman, 1959) started the job redesign movement. Subsequently, job redesign has become a useful tool in developing ergonomic programs that have resulted in increased motivation and fewer injuries (Mier, 1992).

Work redesign is a unique approach to motivation and company reorganization for four reasons: (1) work redesign alters the basic relationship between a person and what they do on the job; (2) work redesign directly changes behavior, which tends to stay changed; (3) work redesign offers, and sometimes forces into one's hands, numerous opportunities for initiating other organizational changes; and (4) work redesign, in the long-term, can result in organizations that re-humanize rather than dehumanize employees (Hackman and Shuttle (1977). The entire concept of job redesign is based upon the theories of motivation and the motivation literature.

Since developing the JCM, numerous research studies have been conducted and replicated to study workers as a strategy to improve personal and organizational outcomes through job redesign. A review of recent literature confirms the importance of the JCM.

Sever & Malbasic (2019) studied the role of the JCM in employee motivation and satisfaction among several companies in Croatia. The Croatian study had a total of 75 respondents and employed the Job Diagnostic Survey (JDS), an instrument developed by Hackman and Oldham. The JDS utilizes a five-

point Likert scale. In their study, Server & Malbasic (2019) employed a closed-type question to study the impact of employee motivation and satisfaction. The study found that the psychological state of Meaningfulness of Work (Skill Variety, Task Identity, and Task Significance) was rated high by respondents. In addition, the psychological state of Experienced Responsibility for Outcomes of the Work, as measured by an Autonomy rating, was less than the overall average for Experienced Meaningfulness of Work. The psychological state of Knowledge of the Actual Results of the Work Activities, as measured by Feedback, was less present among respondents. Results showed that the dependent variable of motivation was rated high by employees at 81 percent. Sixty-two percent of employees rated the dependent variable of Job Satisfaction as high.

Sever & Malbasic (2019) found high correlations between JCM variables in the workplace, and motivation was rated positive and moderate, and almost good. The characteristics between the interaction of variables in the workplace and job satisfaction were positive and very good.

Deremirk & Nalla (2018) tested the JCM using the short form of Hackman and Oldham's JDS. The study surveyed 637 Turkish airport police officers. In the study, Deremirk & Nalla (2018) hypothesized that the JCMs five core job dimensions plus extrinsic rewards had a direct, positive impact on work motivation and job satisfaction. Results of correlation tests among items confirmed the hypotheses at the bivariate level lending further support for the JCM.

Using the JCM, Allan, Collisson, & Duffy (2018) tested recommendations that helping others leads to more meaningful work. Building on previous theory, prosocial work interventions were incorporated to measure their effects between Task Significance and Meaningfulness of Work. To that end, three separate studies were analyzed. Allen, Collisson, and Duffy (2018) found that across all three studies, helping others resulted in participants experiencing more Meaningfulness of Work.

Blanz (2017) surveyed 734 social workers in Germany. A replication study of 101 new persons was also conducted. As with previous research studies in the for-profit sector, the German social workers showed consistent and positive correlations for the five job core characteristics as well as the three psychological states in not-for-profit settings. This research found all JCM variables correlated positively with job satisfaction as mediated through the three psychological states.

Ali, Said, Yumus, Kader, Latif, and Munap (2014) studied job motivation and satisfaction in the fast-food industry. The study included 122 completed surveys and found good internal consistencies. The research studied job satisfaction, task identity, task significance, and autonomy. More specifically, this study analyzed the relationship between job characteristics and job satisfaction among managers. The study confirmed the findings of Hackman and Oldham model.

Ayandele and Nnamseh (2014) studied the JCM in the civil service field within the African setting. The study concluded that the JCM was valid in both European and African settings, and in the manufacturing and service industries. The researchers recommended that managers in the civil service field acknowledge individual differences because people respond differently to work enrichment strategies in organizational settings. The study supported the overall validity of the JCM.

Moloi (2014) utilized the JCM to study 11th and 12thgrade educators in 14 selected secondary schools. This study investigated JCM's five core job dimensions and their relationship to race and gender. The study analyzed JCM results in 15 Qwaqwa schools and found the theory to be valid. Moloi (2014) recommended further studies be conducted to confirm or disprove the propositions of the JCM.

Job Characteristics Model

The Job Characteristics Model is presented below in Figure 1. In the model, Hackman & Oldham (1976) theorize that the interaction between an employee's core job characteristics leads to internal psychological states which affect personal and organizational outcomes. The moderators in the model are an employee's knowledge and skill, growth need strength, and "context" satisfaction (Hackman and Oldham, 1980:90).

- Skill Variety. This variable is the degree to which work requires a variety of knowledge, skills, and competencies. The greater the variety, the more likely the employee experiences the psychological state of meaningful work.

- Task Identity. This refers to the degree to which an employee completes the whole task, not simply a piece of it. Therefore, the more involved a worker is with seeing the job completed from beginning to end, the greater the employee experiences the psychological state of meaningful work.

- Task Significance. This concept concerns the degree to which the job impacts the lives of other people or organizations. The higher the employee perceives task significance, the greater the impact on the psychological state of meaningfulness of work.

- Autonomy. The degree to which an employee has the freedom and independence or control over their tasks is measured by this variable. A high score on autonomy reflects a greater psychological state of experienced responsibility for the outcomes of the work.

- Feedback. Employees who received detailed feedback on the effectiveness of their work tend to have a greater psychological state of knowledge of actual results of work activities.

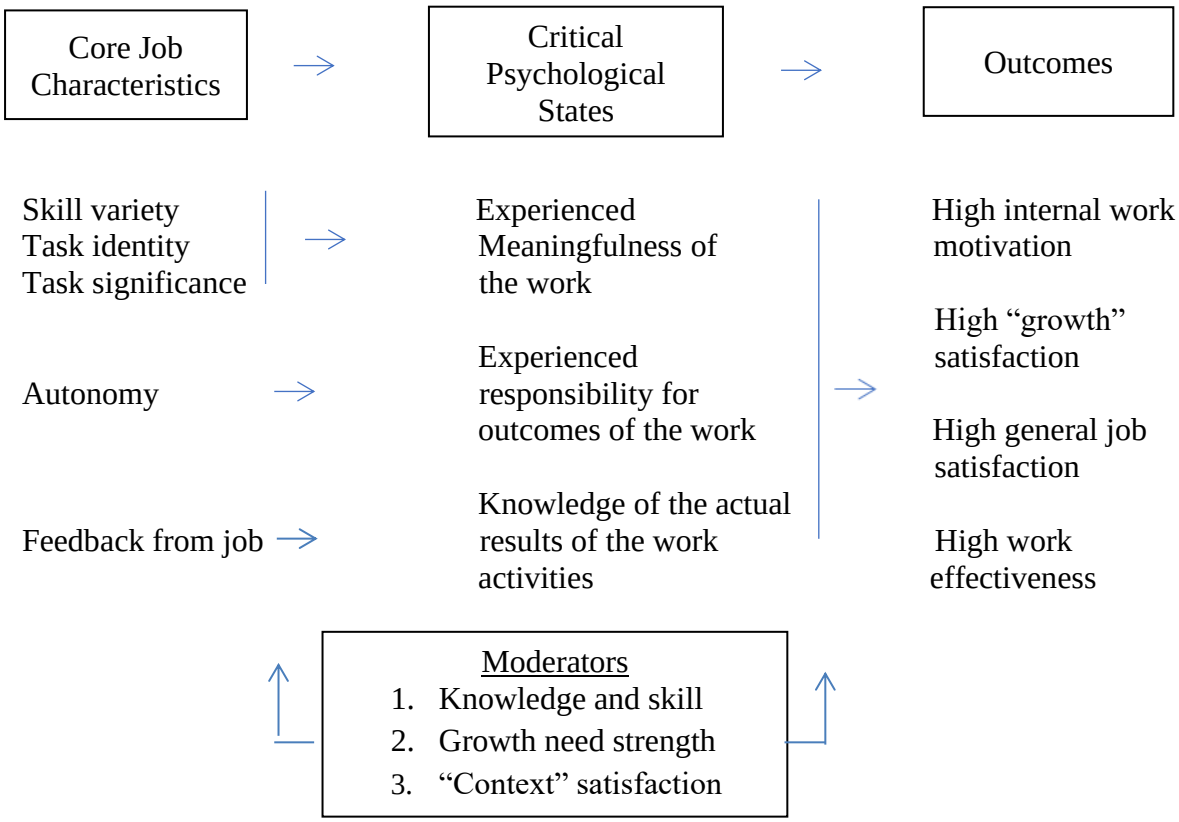

Figure 1. The Characteristics Model (Hackman and Oldham, 1980: 90)

As noted above, the JCM predicts the interaction between variables in an employee's core job characteristics, which influence one of three Critical Psychological States. These states include experienced meaningfulness of the work, experienced responsibility of the outcome of the work, and knowledge of results to the work activities. Kulik, Hackman, and Oldham (1987) found that if one of the above psychological states does not exist, then the employee's overall motivation and job satisfaction in weakened.

- Experienced Meaningfulness of the Work. This construct represents the degree to which a worker feels their work is valuable and meaningful to themselves and to others.
- Experienced Responsibility for Outcome of the Work. This refers to the degree to which an employee feels responsible and accountable for the outcomes of their work.
- Knowledge of the Actual Results of the Work Activities. This psychological state identifies the degree to which an employee understands the effectiveness of their work.

The moderators in the JCM include a worker's knowledge and skill, growth needs strength, and "context" satisfaction (Hackman & Oldham, 1980: 82-86).

- Knowledge and Skill. This moderator refers to the degree that a worker has the necessary knowledge and skill to perform work well.
- Growth Need Strength. The construct refers to the degree to which an employee requires professional growth.
- "Context" satisfaction. This moderator refers to the degree to which a worker is satisfied with various aspects of work such as co-workers, pay, and supervision.

To evaluate the characteristics of the model, Hackman and Oldham (1975: 159-160) created a questionnaire, the Job Diagnostic Survey (JDS). The reliability of the instrument is discussed in the Reliability of the Instruments section below. The JDS instrument is given to employees to calculate an individual Motivating Potential Score (MPS) and to diagnose jobs prior to redesigning work as a strategy to improve personal and organizational outcomes. The formula for calculating an employee's motivating potential score (MPS) is:

$$\text{MPS} = \left[\frac{\text{Skill variety + Task identity + Task significance}}{3} \right] \text{X Autonomy X Feedback.}$$

Research Question

Is there a significant difference in Motivating Potential Scores between employees in U.S. and Non-U.S. countries based on data generated from the JDS short form?

Hypothesis

This study utilized the Job Diagnostic Survey (JDS) for U.S. companies and non-U.S. countries. The researchers developed the following hypotheses to determine if a significant difference exists in employee Motivating Potential Scores between U.S. and Non-U.S. companies and organizations.

H_o: There are no significant differences in samples of employee Motivating Potential Scores in companies and organizations between U.S. and Non-U.S. countries based on data generated from the JDS *short form.*

H_1: There are significant differences in samples of employee Motivating Potential Scores in companies and organizations between U.S. and Non-U.S. countries based on data generated from the JDS *short form.*

Methodology

Survey Instrument

The short form of the Job Diagnostic Survey (JDS) instrument was used in this research. The short form incorporates a 5-point Likert scale with 23 questions.

The JDS (short form) is designed to be completed by the incumbents of a job or jobs in question-not by individuals outside the job. An instrument designed for the latter purpose is entitled the Job Rating Form (JRF) and is completed only by management personnel. The Job Rating Form uses a 5-point scale for all three sections.

The JDS is not copyrighted. Therefore, it may be used without the author's permission. However, the researchers did send letters to the authors asking for permission to use the instrument and purchased a copy of the instrument from the Educational Testing Service in Princeton, New Jersey. The JDS Short Form excludes measures of the experienced psychological states and uses fewer items to measure other key variables in the job characteristics theory.

In each case, the researchers obtained the permission of the companies to conduct the surveys. For the sites in the non-U.S. group, the researchers translated the survey instruments into Spanish and developed a letter explaining the survey. The letter informed employees that individual responses would remain anonymous. The survey instrument translation and letter were certified for both the translation of the survey questions as well as the implied intent.

Reliability of the Instruments

The Job Diagnostic Survey is intended for use in (1) diagnostic activities to determine whether and how existing jobs can be improved to increase employee motivation, performance, and satisfaction; and (2) evaluation studies of the effects of work design. Since the JDS was originally published (Hackman and Oldham, 1974 and 1975), the instrument has been used in many organizations and subjected to several empirical tests (Cathcart, Goddard, & Youngblood, 1977, Dunham, 1976; Dunham, Aldag, & Brief, 1977; Pierce & Dunham, 1978; Stone & Porter, 1977.

Experience with the JDS and studies of its properties have highlighted a few limitations and suggested several cautions in using the JDS survey instrument (Hackman & Oldham, 1980). The job characteristics, as measured by the JDS, are not independent of one another. When a job is high on one characteristic (such as skill variety), it also tends to be high on one or more other characteristics (such as autonomy and/or feedback). The positive inter-correlations among the job characteristics may reflect problems in how each is measured in the JDS.

Sample and Data Collection

This study consists of 2,330 total responses, with 700 in the United States and 1,630 internationally. In the United States, eight companies were selected for the study. The sample for the first study was derived from a manufacturing plant in northwest Arkansas, where a total of 192 employees from a plant population of 1,000 completed the questionnaire on location. A large retail company in Arkansas comprised the second study, where 89 stores were randomly selected from a population of 1,953 stores. In the second study, 534 employees were surveyed, with a response rate of 62 percent or 330 employees. The researchers conducted a third study in the service industry in the U.S. The survey was conducted in a hospital with 300 employees. Eighty-nine employees responded representing a 30 percent response rate. A random number generator was utilized to determine participants in the study. Twenty-one surveys were completed in a fourth study in the public service sector. The researchers surveyed 26 police officers in a police department. Twenty-one police officers completed surveys for an 81 percent response rate. A fifth study was conducted in the non-profit sector. Eighteen of 26 assisted living facility employees responded to a survey for a 69 percent response rate. A sixth study was conducted in the retail banking sector. Of 21 employees surveyed, 11 responded for a 52 percent response rate. In a seventh study, 26 of 54 employees working in a multi-national manufacturing company completed the survey with a 48 percent response rate. The final study was in the foodservice industry. Thirteen of 41 employees completed surveys with a 32 percent response rate.

Twelve Non-U.S. companies operating outside the U.S. (Nicaragua, Guatemala, Mexico, Costa Rico, Belize, Honduras, Ecuador, El Salvador, and Panama) were also selected for the study. The first study was conducted in a bank in Nicaragua with a population of 600 employees. Two hundred thirty-three employees responded to the survey. This represented a 39 percent response rate. A second study was of a Guatemalan bank with a population of 380 employees. In the study, 152 employees returned the survey representing a 40 percent response rate. The third study was a food service company in Nicaragua. One hundred eight surveys were returned out of a possible 150. This response rate was high due to the encouragement of the owner, who communicated to the employees that individual responses would be kept confidential. In a fourth study, a survey of 274 small service business owners in Mexico was conducted. One hundred seventy-five employees responded for a 64 percent response rate. In a fifth study, 52 Costa Rican bank employees were surveyed with 28 responding. The response rate in this study was 54 percent. In a sixth study, 36 Belize retail employees were surveyed; 15 employees responded for a response rate of 42 percent. In Honduras, a seventh survey was conducted. Three hundred eighty-five employees were surveyed with 158 responding. The response rate in this study was 41 percent. In El Salvador, the eighth study of 786 employees in the retail industry was conducted. The survey resulted in 354 responses, a 45 percent response rate. For the ninth survey, employees of an Ecuadorian retail firm were surveyed. One hundred fifty-seven of 402 employees responded. That survey resulted in a response rate of 39 percent. A 10th survey comprised a study of government operations employees in Mexico. Three hundred fifty-six employees were surveyed with 134 employees responding. The response rate for this study was 38 percent. In an 11th study, a retail company in Panama was surveyed. Fifty-four of 125 employees surveyed responded, or 43 percent. The 12th study of non-U.S. companies occurred in Guatemala. One hundred twenty-nine employees working for a large multi-national company were surveyed. Sixty-two surveys were completed for a 48 percent response rate.

All studies above utilized the Job Diagnostic Survey (JDS). Employees completed the Job Diagnostic Survey (JDS) instruments, which were sealed in envelopes, then collected at a central location and returned to the researchers. The questionnaires were scored, with results compared to each other and to the Hackman and Oldham database.

In each case, the researchers obtained the permission of the companies to conduct the surveys. For the sites in the non-U.S. group, the researchers translated the surveys into Spanish and developed a letter explaining the survey and informing the employees that the individual responses would remain anonymous. The survey instrument translation and letter were certified for both the translation of the survey questions as well as the implied intent.

Results of the Study

Table 1 compares eight studies conducted by the researchers in the United States in the manufacturing, retailing, public service, non-profit sectors, banking, and foodservice. Table 1 also reflects the means of the research for the manufacturing and sales industries in the United States as calculated by Hackman and Oldham.

Table 2 reflects 12 non-U.S. studies in three banks (service industry in Nicaragua, Guatemala, and Costa Rica), a food service company in Nicaragua, several small businesses in Mexico, and retail outlets in Honduras, El Salvador, Ecuador, and Belize, and a multinational manufacturing company in Guatemala. The study also included a government operation in Mexico. Table 1 and Table 2 display the scores for the core job characteristics of the JCM. Those core characteristics include skill variety, task identity, task significance, autonomy, feedback, and motivating potential score. The tables also reflect the motivating potential score (MPS) for each of the research studies.

Table 1: Means for the Studies in the Service, Manufacturing and Retail Industries United States

Dimensions	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**Average Means**
			n=192	n=330	n=89	n=21	n=18	n=11	n=26	n=13	n-=700
Skill Variety	4.80	4.20	4.89	4.46	4.05	4.51	3.84	4.00	4.21	4.00	4.30
Task Identity	4.40	4.30	3.94	5.25	3.89	3.83	3.69	3.13	3.93	3.13	3.95
Task Significance	5.50	5.30	5.31	5.59	4.48	4.5	4.48	4.34	4.19	4.34	4.80
Autonomy	4.80	4.50	4.67	5.30	3.56	3.8	3.56	3.59	4.03	3.59	4.14
Feedback	4.44	4.70	4.07	4.05	3.36	3.78	3.36	3.80	3.44	3.80	3.88
MPS*	104.52	97.29	89.59	109.47	49.52	61.47	59.86	52.21	57.01	52.10	69.87*

69.87 = (4.30+3.95+4.80)/3(4.14*3.88)

Legend:
A. Hackman & Oldham Mean for Sales Industry
B. Hackman & Oldham Mean for Manufacturing Industry
C. United States Study #1 Manufacturing Company
D. United States Study #2 Major Retailing Company Multinational

E. United States Study #3 Hospital (Service)
F. United States Study #4 Public Service Police Department
G. United States Study #5 Non-Profit Organization Assisted Living Facility
H. United States Study #6 Retail Sector Banking
I. United States Study #7 Service Industry US
J. United States Study #8 Food Service US

Table 2: Means for the Studies in the Service, Manufacturing and Retail Industries Non-U.S.

Dimensions	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**Average Means**
	n=233	n=152	n=108	n=175	n=28	n=15	n=158	n=354	n=157	n=134	n=54	n=62	n=1,630
Skill Variety	3.77	3.71	3.70	3.77	4.03	3.52	3.72	3.74	3.87	3.56	3.50	3.916	3.73
Task Identity	3.01	3.35	3.62	3.95	4.21	3.72	4.07	3.27	3.44	3.38	3.57	4.069	3.64
Task Significance	2.50	3.10	3.17	3.70	3.35	4.01	4.32	3.29	3.44	3.34	3.44	3.609	3.44
Autonomy	2.86	2.72	3.88	3.70	3.85	3.70	3.68	3.13	3.32	3.23.	3.22	3.887	3.45
Feedback	3.50	3.48	3.95	3.70	3.24	3.31	3.17	3.12	3.72	3.36	3.51	3.747	3.48
MPS *	31.79	32.05	53.53	52.05	48.20	45.93	47.09	33.53	44.26	37.19	39.58	59.291	43.26*

43.26 = (3.73+3.64+3.44)/3(3.45*3.48)

Legend:
A. Non-United States Study #1 Bank in Nicaragua (Service)
B. Non-United States Study #2 Bank in Guatemala (Service)
C. Non-United States Study #3 Food Service in Nicaragua
D. Non-United States Study #4 Small Service Business in Mexico
E. Non-United States Study #5 Bank in Costa Rica
F. Non-United States Study #6 Retail in Belize
G. Non-United States Study #7 Retail in Honduras
H. Non-United States Study #8 Retail in El Salvador
I. Non-United States Study #9 Retail in Ecuador
J. Non-United States Study #10 Government in Mexico
K. Non-United States Study #11 Retail in Panama
L. Non-United States Study #12 Manufacturing in Guatemala Multi-National

The MPS formula was utilized to compute each Motivating Potential Score. Potential scores range from 1 to 125. The MPS provides a good indication of those job characteristics that could be enhanced to improve motivation. The MPS for the manufacturing company and the retailing company in this research are comparable to the means in the Hackman and Oldham database. The MPS for the hospital does not have a comparable mean in the Hackman and Oldham database, Hackman and Oldham (1975). In addition, the MPS for the Central American banks, the foodservice company in Nicaragua, as well as the small service businesses in Mexico, are comparable to the hospital, but significantly below the Hackman and Oldham mean for the sales industry. In addition, the studies in the public sector and non-profit organizations were higher than the results found in the international samples.

Table 3 reflects the mean scores for the United States versus Non-United States companies in this sample. The researchers found that the mean MPS for U.S. companies was 69.87 versus 43.26 resulting in a variance of 26.61. The two dimensions that had significant differences were task significance and autonomy.

Table 3: Means for the United States versus Non-U.S. Studies

Dimension	Average for US Companies	Average for Non-US Companies	Variance
Skill Variety	4.30	3.73	.51
Task Identity	3.95	3.64	.21
Task Significance	4.80	3.44	1.21
Autonomy	4..14	3.45	.56
Feedback	3.88	3.48	.22
MPS*	69.87*	43.26*	26.61*

*This is computed by using the MPS formula.

Discussion and Conclusions

The null hypothesis proposed, "there are no significant differences in samples of employee Motivating Potential Scores in companies and organizations between U.S. and Non-U.S. countries based on data generated from the JDS short-form results". To test this hypothesis, the researchers performed a one-factor ANOVA to determine the variation between the subgroups. The results are shown in Table 4. Since the analysis, the F value of 6.822 was larger than the F critical of 1.727 the researchers rejected the null hypothesis and concluded there is a statistically significant difference between the U.S. and Non-U.S. companies.

The alternative hypothesis proposed, "there are significant differences in samples of employee Motivating Potential Scores in companies and organizations between U.S. and Non-U.S. countries based on data generated from the JDS short-form results". To test this hypothesis, the researchers then performed an analysis of variance for both the U.S. and Non-U.S. companies; the results for the U.S. companies are displayed in Table 5 and for the non-U.S. companies in Table 6. The researchers found there was a significant difference between the two groups. The largest variance was between the retail company in the U.S. and the bank in Nicaragua. The test of the independent groups found the F score was significant. The overall variance for the U.S. was .89634 and non-U.S. was 1.058. The F score was 1.0581/.8963=1.181, meaning there is a statistically significant difference between the U.S. and Non-U.S. companies, allowing validation for the theory that culture or possible gender is the reason for the variances. Therefore, the alternative hypothesis was accepted. When both the U.S. and Non-U.S. ANOVA was calculated, the results provided in Table 4, yielded an F score of 6.822 with an F critical of 1.727. The F score was larger than the F critical, therefore, the alternative hypothesis was accepted.

When comparing the 12 different Non-U. S. Companies, with the eight companies located in the United States, the researchers found a statistically significant difference in the scores between the two groups. The researchers believe these are possibly due to culture. Of note, the MPS score of the Non-U.S. multinational company was the highest of the Non-U.S. companies, which may suggest some cultural overlap.

Table 4: ANOVA: One-Factor Test

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	5	20.42	4.084	0.14803
Column 2	5	19.69	3.938	0.09197
Column 3	5	19.34	3.868	0.19027
Column 4	5	24.65	4.93	0.41755
Column 5	5	19.8	3.96	0.0979
Column 7	5	22.88	4.576	0.32668
Column 8	5	18.14	3.628	0.06077
Column 9	5	15.89	3.178	0.19167
Column 10	5	16.35769	3.271538	0.144535
Column 11	5	18.35	3.67	0.08925
Column 12	5	18.82	3.764	0.01173
Column 13	5	18.68	3.736	0.17978
Column 14	5	18.26	3.652	0.06737
Column 15	5	18.96	3.792	0.19017
Column 16	5	16.55	3.31	0.06385
Column 17	5	17.79	3.558	0.05202
Column 18	5	17.07004	3.414008	0.018229
Column 19	5	17.23742	3.447483	0.018587
Column 20	5	19.22796	3.845591	0.030526
				2.390887

ANOVA						
Source of Variation	SS	Df	MS	F	P-value	F critical
Between Groups	16.52727	19	0.869856	6.821656	5.81E-10	1.726898
Within Groups	9.563548	75	0.127514			
Total	26.09082	94				

Table 5: ANOVA: ONE-Factor Test for US Companies

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	5	20.42	4.084	0.14803
Column 2	5	19.69	3.938	0.09197
Column 3	5	19.34	3.868	0.19027
Column 4	5	21.65	4.33	0.04255
Column 5	5	21.88	4.376	0.15968
Column 6	5	18.14	3.628	0.06077
Column 7	5	18.86	3.772	0.20517
Column 8	5	19.8	3.96	0.0979
				.89634

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	2.35163	7	0.335947	2.69745	0.02576	2.312741
Within Groups	3.98536	32	0.124543			
Total	6.33699	39				

Table 6: ANOVA: ONE-Factor Test for Non-US Companies

ANOVA Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	5	15.89	3.178	0.19167
Column 2	5	16.35769	3.271538	0.144535
Column 3	5	18.35	3.67	0.08925
Column 4	5	18.82	3.764	0.01173
Column 5	5	18.68	3.736	0.17978
Column 6	5	18.26	3.652	0.06737
Column 7	5	18.96	3.792	0.19017
Column 8	5	16.55	3.31	0.06385
Column 9	5	17.79	3.558	0.05202
Column 10	5	17.07004	3.414008	0.018229
Column 11	5	17.23742	3.447483	0.018587
Column 12	5	19.22796	3.845591	0.030526
				1.057717

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	2.768011	11	0.251637	2.854874	0.005887	1.99458
Within Groups	4.230868	48	0.088143			
Total	6.998879	59				

Suggestions for Future Research

Future research should test the JCM in settings outside the United States, Mexico, Central, and South America to evaluate the five core job characteristics and their impact on personal and organizational outcomes. Future research should also examine whether culture variables, such as those outlined in Hofstede's model (Power Distance, Individualism, Masculinity, Uncertainty Avoidance, and Long-Term Orientation) help to explain the differences found between Motivating Potential Scores between U.S. and Non-U.S. companies and organizations. Future JCM studies should include a demographic survey of employees comprising job type and the perceived leadership style of the immediate supervisor.

References

Ali, S., Said, N., Yunus, N., Kader, S., Latif, D., & Munap, R. (2014). Hackman and Oldham's Job characteristics Model to Job Satisfaction, *Procedia-Social and Behavioral Sciences, 129*, 46-52.

Allen, B. A., Collisson, B. C., & Duffy, R. D. (2018). Helping others increases Meaningful work: Evidence from three experiments. *Journal of Counseling Psychology, 65(2),* 155-165.

Ayandele, I. & Nnamesh, M. (2014). Hackman and Oldham Job Characteristics Model (JCM) and Akwa Ibom State Civil Servants' Performance. *Canadian Social Science, 10*(2), 10.

Blanz, M. (2017). Employees' job satisfaction: A test of the job characteristics model among social work practitioners. *Journal of Evidence-Informed Social Work, 14*(1), 35-50.

Cathcart, Goddard, & Youngblood. (2017). The Academy of Management Journal, 20 (2) 209-223

Davis, L.E. (1957). Toward a theory of job design. *Journal of Industrial Engineering*. *8*, 19-23.

Deremirk, I. C., & Nalla, M. K. (2018). Predicting job satisfaction and motivation of aviation security personnel: a test of job characteristics theory. *Secur J* 31, 901–923. https://doi.org/10.1057/s41284-018-0137-2

Dunham, R.B., (1976). The measurement and dimensionality of job characteristics. *Journal of Applied Psychology*. *61* 404-409.

Evans, M.G., Kiggundu, M.U., & House, R.J. (1979). A partial test and extension of the job characteristics model of motivation. *Organizational Behavior and Human Performance*. *24*, 354-381.

Ford, R.N. (1969). *Motivation thorough work itself*. New York NY: American Management Association.

Hackman, J. R., Oldham, Greg R., (1980). Job Redesign. Boston, MA: Addison-Wesley.

Hackman, J. R., & Oldham, Greg R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*. *16*, 250-276.

Hackman, J. R., & Oldham G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology, 60*(2), 159-170.

Hackman, J. R., & Oldham, G. R. (1974). The job diagnostic survey: An instrument for the diagnosis of jobs and the evaluation of job redesign projects. *JSAC Catalog of Selected Documents in Psychology*, *4*(148), (MS No. 810).

Hackman, J.R. & Suttle, J.L. (1977). *Improving Life at Work.* Chocowinity, NC: Scott Foresman and Company.

Herzberg, F., (1966). *Work and the nature of man*. Cleveland, OH: World Publishing Co.

Herzberg, F. and Mausner, B. & Snyderman, B. (1959). *The motivation to work*. New York, NY: Wiley.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values.* Beverly Hills, CA: Sage

Hofstede, G. (1982). Dimensions of national cultures. In R. Rath, H. S. Asthana, D. Sinha, & J.B.H. Sinha (Eds.), Diversity and unity in cross-cultural psychology. Lisse, Netherlands: Swets and Zeitlinger.

Kulik, C., Hackman, J., & Oldham, G. (1987). Work design as an approach to person-environment fit. *Journal of Vocational Behavior, 31(3): 278-296.*

Lawler, E.E., III. (1973). *Motivation in work organizations*. Monterey, CA: Brooks/Cole.

Maher, J.B. (1971). (Ed.) *New perspectives in job enrichments*. New York, NY: Van Nostrad Reinhold.

Mier, Franklin E, (1992) Labor and industry should cooperate to reduce ergonomic injury rate. Occupational Health & Safety (OHS), 61, (10) 43, 94-95.

Moloi, T. (2014). Testing Hackman and Oldham's theory of enhancing the quality of work life of Employees. *International Journal of Diversity in Organizations, Communities and National, 7*(3).

Muchinsky, P.M. (2006). *Psychology applied to work.* Belmont, CA: Thompson Wadsworth.

Myers, M. S. (1968). *Every employee a manager*. California Management Review, Volume 10, Issue 3, page(s) 9-20.

Pierce, J. L. & Dunham, R. B. (1978). The measurement of perceived job characteristics. The job diagnostic survey versus the job characteristics inventory. *Academy of Management Journal*. *21*, 123-128.

Sever, S. & Malbasic, I. (2019). DIEM: Dubrovnik International Economic Meeting; ISSN 1849-3645 (Print); ISSN 1849-5206 (Online). 4*(1),* 55-63.

Special Task Force to the Secretary of Health, Education, and Welfare. (1973) *Work in America*. Cambridge, Mass.: M.I.T.

Steers, R.M., & Porter, L.W. (1987). *Motivation and work behavior*. Boston, MA: McGraw-Hill.

Stone E.G., & Porter, L.W. (1979). On the use of incumbent supplied job characteristics data. *Perceptual and Motor Skills*. *46,* 751-758.

Vroom, V. (1964). *Work and motivation*. New York, NY: Wiley.

Walker, C. & Guest, R. (1952). *The man on the assembly line*. Cambridge, MA: Harvard Graduate School of Business Administration.