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Hierarchical Linear Modeling of National Culture within a Remuneration Framework

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This study simultaneously examines both individual and country level effects on employee remuneration preferences by using multivariate, multilevel linear models. The results suggest that country level effects account for a greater percentage of the variance than individual level effects across all five remuneration constructs and across all ten countries included in this study. Valuable information about remuneration preferences, at both the country and individual level, is obtained simultaneously accounting for the multilevel and interdependent structure of the data.

Field of Research: Strategic International Human Resource Management

1. Introduction

Previous studies have established the significant relationship between employee remuneration preferences and national culture (Herkenhoff, 2000). This study will further examine this relationship by not only attributing variance to national culture, but also by taking into account the variance associated with individual level characteristics through use of hierarchical linear modeling (HLM). This type of nested modeling simultaneously examines both individual and country level effects by combining the analytic approaches of multilevel analysis and structural equation modeling (Raudenbush, 2004, pp. 7). In this study, the hierarchy consisted of lower level observations from the individual respondent nested within a higher level, defined by the country of the respondent. The first level within the HLM model includes the remuneration composite variables (variance within individuals).

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The second level is the individual respondent (variance between individuals), and the third level is the country (variance between countries). The remuneration response variables are analyzed at both individual and country levels.Traditional fixed regression analysis can answer questions in relation to employees, or if the data is aggregated, in relation to country level.

However, it can only answer those questions one at a time. HLM analyses answers both questions at the same time. This type of modeling allows variance to be attributed *simultaneously* to more than one variable (Ewing et al, 2006); in this case variance is attributed to individual characteristics and national culture values. It has been cautioned that failure to account for the essential hierarchical structure of data invariably leads to the violation of the assumption of uncorrelated errors (Luke, 2004, pp. v).

Besides error concerns, multilevel methodology was chosen over other analytic techniques for its ability to handle levels of analysis issues, such as aggregation bias, heterogeneity of regression, intra-class correlation and slope/intercept variation.

The national cultural framework for collecting the data was based on the Hofstede (1980, 1984, 1993) and Bond (1988) cultural dimensions. The remuneration framework for collecting the data was based on the RM98 tool (Herkenhoff, 2000).

2. Literature Review

The statistical basis for multilevel modeling has evolved over the past few decades from a variety of disciplines. These models are becoming more prevalent in the physical sciences (Kuwana et al, 1993; Diez-Roux, 2001), the social sciences (Reich et al, 1998; Gilman et al, 2003), organizational studies (Villemez & Bridges, 1988; Maes & Lievens, 2003), and in political/cultural studies (Subramanian et al, 2002; Luke & Krauss, 2004).

Thompson and Richter (1998) suggest that when organizations think globally, they need to apply their remuneration practices locally. Gomez-Mejia (1992, pp.390) supports the notion that remuneration practices should be relevant for each national culture in which they are applied, when he states that “the emerging challenge is not to take advantage of low wage opportunities, but to design compensation strategies that are most appropriate for specific cultural conditions”. O’Toole and Lawler warn that “All too many compensation practices are poor fits with today’s competitive realities” (2007, pp.6).

The results of this research may assist managers of multinational organizations in designing "culturally tuned" remuneration packages that better motivate employees, while achieving competitive advantage. Management practices that reinforce national culture are also more likely to yield predictable behavior (Mischel & Wright, 1987), self-efficacy (Earley, 1994), and high performance (Earley & Ang, 2003,

pp.304). A multilevel view of national culture provides an important link in the strategic understanding of remuneration as a motivational tool in a global context.

The cross cultural analyses within this study make a unique contribution towards an integrated theory of how national culture affects employees' remuneration preferences.

3. Methodology and Research Design

3.1 Measures

The overall measurement model employs 4 independent national culture variables, 5 dependent remuneration variables and 5 moderating variables representing individual characteristics of employees.

This study uses the individual level national culture constructs from the VALIND99 tool (Herkenhoff, 2000). This tool is based on Hofstede's ecological national culture indices as measured in the VSM94 instrument (Hofstede, 1994). VALIND99 produced reliable individual-level results associated with all of the Hofstede indices except for the uncertainty avoidance index (UAI); therefore UAI will not be included in the modeling. The VALIND99 individual level dimensions are summarized in Table 1.

Table 1.National culture measured at the individual level: VALIND99.

Dimension (R Cronbach Alpha)	Description
iPDI (0.61)	Refers to the degree to which power differences are accepted and sanctioned by members of a society. A high iPDI describes an individual that believes there should be a well-defined order in which everyone has a rightful place. Whereas a low iPDI is associated with the prevalent belief that all people should have equal rights and should have the opportunity to change their position in a society.
iLTO (0.91)	This dimension is based on Bond's (1988) Confucian dynamic, which was later adopted by Hofstede (1994) and acknowledges that different cultures have different concepts of time. High iLTO stands for a member of society who is oriented toward future rewards and whose values support perseverance, thrift and has a high regard for relationships. A low iLTO, or a short term orientation, is associated with individuals who are oriented to rewards in the present.
iMAS (0.51)	Refers to the degree to which traditional male values are important to society. As defined by Hofstede, male values would include assertiveness, performance, ambition, achievement, and material possessions. The female values would include quality of life, environment, nurturing, and concern for the less fortunate countries. A high iMAS individual would value clearly differentiated sex roles with men being dominant. In low iMAS individuals, the sex roles are seen as being more fluid, with more of an emphasis on feminine values.
iIDV (0.98)	Describes the relationship between individuals and groups and the extent to which the individual is integrated into the group. A high iIDV score depicts someone who emphasizes the role of the individual over the role of the group. High iIDV employees Typically have more fluid relationships with other employees. People are expected to look after their own interests and at the most the interests of their immediate family. Conversely, a low iIDV indicates someone who emphasizes the importance of the group over the importance of the individual.

Remuneration was operationalized using the RM98 tool (Herkenhoff, 2000). The remuneration constructs within RM98 are related to the Hofstede national culture indices (Table 2).

Table 2. Remuneration Instrument: RM98

Cultural Dimension	**Remuneration Dimension (R Cronbach Alpha)**	**Survey Items**
iPDI	HIERAR (0.86) Allocation of bonuses on an hierarchical basis	• Based on grade level • All bonuses equal • Larger bonuses for management
iLTO	PENSION (0.82) Pension preference	• Pensions are important • Redirect pension contributions • Higher pay instead of pension
iMAS	WELFARE (0.88) Family welfare benefits	• Increase pay in lieu of all welfare benefits • Option to purchase more welfare benefits • Decrease some welfare coverage for increase in pay
iIDV	TEAMPAY (0.84) Team-based pay	• Project team members get teampay • Self managed work team members get teampay • No team pay.Pay only on individual performance
iIDV	TEAMALL (0.92) All members get same pay	• Team members receive equal pay • Team members pay based on contribution • Best worker, best reward • Team works best with equal pay for all

The individual characteristic variables include age, gender, number of dependents, education, and job security. The individual characteristics of the respondents were developed based on prior studies (Cammann et al, 1983; Hofstede, 1994; Triandis & Singelis, 1998; House et al, 2002).

3.2 Sample

This study includes an overall sample size of 261 respondents across ten countries with each registering at least 20 respondents. The country samples are: Angola (20), Australia (31), Canada (20), France (40), Indonesia (20), Papua New Guinea (20), Saudi Arabia (25), Singapore (22), United States (39), and Venezuela (24).

The countries were not chosen because of convenience but rather because of their standing on the Hofstede cultural indices. Countries were parsimoniously chosen to include low, medium and high scores for each of the national cultural indices. In addition four countries were included which are new to the Hofstede framework: Angola, Papua New Guinea, Indonesia, and Saudi Arabia.

The employees chosen to participate in this study were non-management, non-union, local nationals, in full-time employment, in technical functions, within the same multinational corporation. The local HR management randomly distributed surveys to employees meeting the sample characteristic requirements. Participation by the target sample was voluntary and anonymity was provided.

All countries had a high response rate except for France: Angola 80%, Australia 100%, Canada 88%, France 54%, Indonesia 80%, Papua New Guinea 80%, Saudi Arabia 100%, Singapore 73%, USA 87%, and Venezuela 82%. The overall response rate was 82%. The French anomaly may be in part due to the fact that the first shipment of surveys was delivered to the wrong location, and the HR manager was on vacation by the time that the second shipment arrived, thereby reducing the internal support of the project.

3.3. Hierarchical Linear Model

LISREL was used in conjunction with PRELIS (Jöreskog & Sorbom, 2007) to analyze the hierarchical data.

To estimate the proportion of variance in each of the composite variables due to country and individual effects, a simple three level model was fit to each variable. The general equation for this model for each employee (i), in each country (j), is given in Table 3.

Table 3. Hierarchical Linear Model

[**Equation 1.1**] $$y_{ij} = a_{00} + \sum_{n=1}^{M}\sum_{i=1}^{N}\sum_{j=1}^{10}\left[\left(\beta_n X_n\right)_{ij} + u_j + e_{ij}\right]$$

i	the employee label with values ranging from 1–261
j	the country label with values ranging from 1–10
n	the number of response variables which are fit in the model (5: HIERAR, PENSION, WELFARE, TEAMPAY, TEAMALL)
y_{ij}	the score on a given response variable for employee i in country j
a_{oo}	the overall intercept term, constant across all employees and all countries
β_n	the mean score for employees in the sample of countries (intercept)
X_n	a vector of unities that operates as an indicator to define the data structure
u_j	the country level random coefficient for country j: a residual that varies randomly between countries
e_{ij}	the employee level random coefficient for employee i in country j

The random variable e_{ij} is assumed to have a mean of zero and represents the sum of all other influences on y_{ij}. The β_n term constitutes the fixed part of the model, while u_j and e_{ij} form the random part of the model.

The model specified in Equation 1.1 was fit for each of the variables to obtain estimates of the variances for the intercepts, fitted variables, and for the random terms u_j and e_{ij}. The variances for the residuals at country (u_j) and employee (e_{ij}) levels were used to compute the proportion of residual variance due to differences between countries and the proportion of residual variance due to within-employee effects. The variances were calculated using the formulae in Table 4.

Table 4. Variance Formulae.

[Equation 1.2]	between countries	$p_u = \frac{\sigma^2_{u_j}}{\sigma^2_{u_j} + \sigma^2_{e_{ij}}}$
[Equation 1.3]	within employees	$p_e = \frac{\sigma^2_{e_{ij}}}{\sigma^2_{e_{ij}} + \sigma^2_{u_j}}$

4. Discussion of Findings

4.1. Descriptive Statistics

All of the 36 correlations were significant ($p<0.05$), therefore multicollinearity among variables did not present a problem in the statistical analysis (Table 5).

Table 5. Means, Standard Deviations, and Correlations.

Variables	Mean	HLM	Correl. Matrix								
		s.d	1	2	3	4	5	6	7	8	9
1 HIERAR	7.77	2.11	1								
2 PENSION	5.79	1.72	0.249**	1							
3 WELFARE	6.51	1.84	-0.058	-0.353**	1						
4 TEAMPAY	4.82	2.35	0.496**	-0.144**	0.047	1					
5 TEAMALL	6.35	1.01	-0.718**	-0.188**	0.033	0.651**	1				
6 iPDI	4.18	1.25	.263**	0.207**	-0.304**	-0.136*	-0.103	1			
7 iLTO	3.90	1.57	0.279**	0.867**	-0.401**	-0.153*	-0.175**	0.228**	1		
8 iMAS	4.55	1.15	0.158**	-0.058**	0.023	-0.143*	-0.191**	0.253**	-0.091	1	
9 iIDV	3.97	1.73	-.684**	-0.011	-0.183	-0.59**	0.818**	-0.091	0.017	-0.239**	1
N= 261											
* p< .05											
**p< .01											

4.2. Multilevel Analysis

The distributional properties of the ordinal variables were examined using PRELIS. The univariate and multivariate tests for all variables in both surveys were significantly different from zero ($p < 0.05$).

The first step of analysis for all levels, involved running fully unconditional models with no predictors specified at any level of the hierarchy. In all models, because an asymptotic covariance matrix was the input, the standard errors were estimated under non-normality (Jöreskog & Sorbom, 2007). The standard errors are all within the acceptable level (Table 6).

The fixed part of the model includes the estimates of the elements of the fixed coefficient vector for each iteration. Other statistics in this section include the standard errors, z-values, and the probabilities of exceeding those limits. Although these statistics were calculated for all iterations, they are only indications of relevant values at convergence and as such, are reported in this study only for the converged models. The random part of the model includes the estimates of all of the free elements of the random parameter covariance matrices at different levels of the hierarchy. The standard errors, z-values and probabilities of exceeding those limits in the converged model are reported.

The model was run with and without normalized scores. The change in the decomposition of variance was less than 2% for each of the five constructs in this model. This minimal change does not warrant normalization; moreover transformation to normalized scores may complicate the interpretation of the data.

Byrne recommends using the asymptotic covariance matrix in conjunction with the polychoric matrix for non-normal ordinal data (1998, pp. 189). The estimation of parameters is then based on the weighted least squares (WLS) method. The input data for the multilevel model was used in its raw form in conjunction with polychoric correlation and asymptotic covariance matrices.

This model included data from 261 respondents in Level 1 and 10 countries in Level 2. The composite response variables from the model (HIERAR, PENSION, WELFARE, TEAMPAY, TEAMALL) were run individually to test for significance within a hierarchical structure. Table 6 reports the results from the fixed part of each model, where Beta-Hat represents the estimate of the fixed coefficient vector and –2lnL refers to the log likelihood values.

Table 6. Base Variance Components Models: Fixed Part.

Response Variable	Beta–Hat	Standard Error	Z–Value	PR>|Z|	-2lnL
HIERAR	2.98780	0.31514	9.48081	0.00	420.2960
PENSION	3.01677	0.32491	9.28484	0.00	449.1250
WELFARE	3.08626	0.33482	9.21775	0.00	486.4804
TEAMPAY	2.75584	0.31977	8.61834	0.00	509.0857
TEAMALL	2.79205	0.31751	8.79350	0.00	320.1751

The log likelihood values (-2lnL) in Table 7 show minimal variations, suggesting that each of the single coefficient models approximate a similar fit. The comparison of the -2lnL values over the iterations within each model indicates the stability of the iterative procedure.

Table 7. Log Likelihood Values.

Response Variable	-2lnL		
	Iteration 1	Iteration 2	Iteration 3
HIERAR	586.543	420.318	420.296
PENSION	594.026	449.129	449.125
WELFARE	605.547	486.487	486.480
TEAMPAY	612.636	509.108	509.085
TEAMALL	566.536	320.187	320.175

The results illustrate that after the first estimation of the likelihood function, stability is quickly reached within two additional iterations. The value of –2lnL in iteration 3 for all response variables displayed negligible difference from the value of –2lnL in iteration 2. Therefore the iterative procedure was considered stable for all response variables. Additionally, the log likelihood statistic decreased from one iteration to the next for all models, suggesting that all models provided good descriptions of the data.

The random parts of the response variables indicated that all variances and covariances are significant. These results are given in Table 8, where Level 2 refers to the individual level and Level 1 refers to the country level.

The Tau–Hat value represents the mean effects of the response variables. Tau–Hat estimates all the free elements of the covariance matrices of the random parameters, at the different levels of the hierarchy. PR>|Z| is the probability of exceeding the z-value limits.

Table 8: Base Variance Components Models: Random Part

Response Variable	**Level**	**Tau–Hat**	**Standard Error**	**Z–Value**	**PR>|Z|**
HIERAR	1	1.080	0.466	2.319	0.020
	2	0.242	0.022	11.180	0.000
PENSION	1	1.147	0.495	2.317	0.021
	2	0.270	0.024	11.180	0.000
WELFARE	1	1.217	0.526	2.314	0.021
	2	0.313	0.028	11.180	0.000
TEAMPAY	1	1.107	0.479	2.308	0.021
	2	0.344	0.031	11.180	0.000
TEAMALL	1	1.100	0.473	2.327	0.019
	2	0.162	0.014	11.180	0.000

As no discrepancies between the covariance and correlation matrices were noted for any of the models, it is suggested that the covariance matrices are all positive definite and none of the models are misspecified. All models achieved convergence within three iterations, suggesting that all models approximate a similar fit to the data. In terms of decomposition of the variance, the models display somewhat similar results (Table 9).

Table 9. Decomposition of Variance

Response Variable	Country Level Effects (%)	Individual Level Effects (%)
HIERAR	82	18
PENSION	80	20
WELFARE	79	21
TEAMPAY	76	24
TEAMALL	87	13

These findings indicate that country level effects explain a greater percentage of the variance than individual level effects for each of the response variables.

4.3. Multivariate Multilevel Analysis

To obtain estimates of the variances and covariances among the dependent variables at the individual and country levels, a five-variate multilevel model was fitted to the data. This approach was used to partition the variance and covariances among the five variables into separate individual level and country level variance/covariance matrices (Rowe, 1998, Radenbush & Bryk, 2002).

To define the five-variate model the countries defined level three units, employees defined level two units and the 'within-employee' measurements on the five response variables defined level one units. This resulted in 1305 level one measurements (261 employees × 5 variables) clustered within 261 employees in 10 countries. In these models, level one variation is not specified for estimation since "… level one exists solely to define the multivariate structure" (Goldstein, 1986, pp.4-2). The employee scores are represented as a set of five equations in which the variables are regarded as the level one structure grouped within employees, with employees grouped within countries (Table 10).

Table 10. Formulae for employee scores

[Equation 1.4]	$y_{1ij} = a_1 + \sum(\beta_n X_n)_{ij} + (u_{1j} + e_{1ij})$
[Equation 1.5]	$y_{2ij} = a_2 + \sum(\beta_n X_n)_{ij} + (u_{2j} + e_{2ij})$
[Equation 1.6]	$y_{3ij} = a_3 + \sum(\beta_n X_n)_{ij} + (u_{3j} + e_{3ij})$
[Equation 1.7]	$y_{4ij} = a_4 + \sum(\beta_n X_n)_{ij} + (u_{4j} + e_{4ij})$
[Equation 1.8]	$y_{5ij} = a_5 + \sum(\beta_n X_n)_{ij} + (u_{5j} + e_{5ij})$
	where: $y_{1ij}, \ldots, y_{5ij}$ are employee scores on each of the five response variables; $a_1, \ldots, a_5$ are fixed parameters defining the means or intercepts of the five response variables over all countries; X_n (n = 1,….5) is the vector of unities defining the data structure; β_n (n = 1,….5) are the coefficients for the fixed part of the model; $u_{1j},\ldots, u_{5j}$ are the residuals representing the unique contribution of the countries that are explained by their means (a_n) and $e_{1ij}, \ldots, e_{5ij}$ are residuals representing the unique contribution of employee i in country j.

An IGLS (iterative generalized least squares) method of estimation within LISREL was used to jointly estimate these equations, to obtain estimates of the means (a_n) and residual variances and covariances among the five variables at the country and employee levels. Level two and level three variances were each ‘purged’ (Rowe, 1999) of the clustering effects of individuals within countries.

The matching of the variance/covariance matrix elements with the elements reported in the random part of the model suggested that the variance/covariance matrices are positive definite and the multivariate, multilevel model was probably not misspecified. Similar results were noted with the correlation matrices.

The variance/covariance results for country level and individual level effects are summarized in Table 11 and Table 12 with all significant Tau-Hat values not exceeding 1.96 times their associated standard errors. Significant effects at both levels are defined with *probabilities of exceeding the given Z–value limit* (PR>|Z|) of less than 0.05. These are indicated with an asterisk in both tables.

Table 11. Multivariate Decomposition: Country Level Effects.

Level 3 Country Level Response Variables	Tau–Hat	Standard Error	Z–Value	PR>|Z|
*TEAMALL / TEAMALL	1.08757	0.46749	2.32639	0.02000
WELFARE / TEAMALL	-0.04287	0.35071	-0.12223	0.90271
*WELFARE / WELFARE	1.21583	0.52550	2.31368	0.02069
*HIERAR / TEAMALL	-0.88113	0.42351	-2.08053	0.03748
HIERAR / WELFARE	-0.03357	0.34966	-0.09600	0.92352
*HIERAR / HIERAR	1.07744	0.46488	2.31768	0.02047
PENSION / TEAMALL	-0.14655	0.34284	-0.42617	0.66903
PENSION / WELFARE	-0.39768	0.37969	-1.04739	0.29492
PENSION / HIERAR	0.26498	0.34821	0.76100	0.44666
*PENSION / PENSION	1.14540	0.49450	2.31630	0.02054
*TEAMPAY / TEAMALL	1.01736	0.45062	2.25767	0.02397
TEAMPAY / WELFARE	-0.05760	0.35025	-0.16445	0.86937
TEAMPAY / HIERAR	-0.79920	0.40799	-1.95884	0.05013
TEAMPAY / PENSION	-0.15665	0.34263	-0.45720	0.64753
*TEAMPAY / TEAMPAY	1.07370	0.46573	2.30542	0.02114

Table 12. Multivariate Decomposition: Individual Level Effects

Level 2 Individual Level Response Variables	Tau–Hat	Standard Error	Z–Value	PR>|Z|
*TEAMALL / TEAMALL	0.16245	0.01453	11.18358	0.00000
WELFARE / TEAMALL	0.00609	0.01427	0.42716	0.66926
*WELFARE / WELFARE	0.31310	0.02800	11.18037	0.00000
HIERAR / TEAMALL	-0.01571	0.01257	-1.25004	0.21128
*HIERAR / WELFARE	-0.03763	0.01756	-2.14315	0.03210
*HIERAR / HIERAR	0.24161	0.02161	11.18073	0.00000
PENSION / TEAMALL	-0.00013	0.01325	-0.01013	0.99192
*PENSION / WELFARE	0.03782	0.01856	2.03805	0.04154
PENSION / HIERAR	-0.03160	0.01629	-1.94011	0.05237
*PENSION / PENSION	0.27037	0.02418	11.18038	0.00000
*TEAMPAY / TEAMALL	0.01446	0.01503	0.96251	0.03579
TEAMPAY / WELFARE	-0.00684	0.02083	-0.32852	0.74252
TEAMPAY / HIERAR	-0.01211	0.01831	-0.66147	0.50831
TEAMPAY / PENSION	-0.00558	0.01936	-0.28824	0.77316
TEAMPAY / TEAMPAY	0.34648	0.03097	11.18605	0.00000

4.4 Significant Variance Results

The variances for all five response variables are significant at both the individual and country level as evidenced in Table 13.

Table 13. Variance Decomposition: Combined Effects

	Country Level		Individual Level	
Response Variable	Variance	(%)	Variance	(%)
TEAMALL	1.08757	87.0	0.16245	13.0
WELFARE	1.21583	79.5	0.31310	20.5
HIERAR	1.07744	81.6	0.24161	18.4
PENSION	1.14540	80.9	0.27037	19.1
TEAMPAY	1.07370	75.6	0.34648	24.4

Table 13 indicates that the employee preference for additional welfare benefits for dependents (WELFARE) has the greatest variance of the five response variables over all countries (1.21583). On the other hand, at the individual level, the employee preference to receive part of their remuneration in the form of teampay (TEAMPAY) has the greatest variation of the five response variables (24.4%).

For all response variables in Table 13, country level effects are greater than the individual level effects. To illustrate, the employee preference for all team members to receive equal pay (TEAMPAY) was influenced more by which country the employee was working in (87%), rather than by which respondent within a given country answered the survey (13%).

4.5 Significant Covariance Results

Similar analyses are presented for the significant covariance results (Table 14). Note that only those response variables with both country level and individual level covariances can report percent effect.

Table 14. Covariance Decomposition.

Response Variables	Country Level Covariance (%)	Individual Level Covariance (%)
TEAMPAY / TEAMALL	1.01736 (94.7)	0.01446 (5.3)
HIERAR / TEAMALL	-0.88113	nc
HIERAR / WELFARE	nc	-0.03763
PENSION / WELFARE	nc	0.03782

The only covariance to achieve significance at both a country level and an individual level in Table 14 is TEAMPAY/TEAMALL. The relationship is substantiated theoretically, as both of these response variables are related to the same national cultural values construct, namely individualism (IDV).

The positive covariance has a greater effect at the country level (94.7%) than at the individual level (5.3%). This suggests that as employee preference for teampay increases so does the employee preference for all team members to receive equal pay. This is a major effect at the country level but only a minor effect at the individual employee level. This may be better understood by considering the following example. Perhaps in the United States where there is a low preference for teampay, employees would prefer to receive at least some individual recognition in circumstances where teampay is given. In other countries, such as Indonesia, where there is a higher preference for teampay, employees are more apt to accept the model in its most collectivist form, with all members treated equally.

The significant covariance of HIERAR/TEAMALL suggests that as employee preference for hierarchical remuneration increases, employee preference for all team members to receive equal pay decreases. Hofstede (1991) suggested that PDI and IDV tend to be negatively correlated. As established in earlier studies high HIERAR values are directly associated with high PDI values and high TEAMALL values are directly associated with low IDV values (Herkenhoff, 2000). The identified negative relationship HIERAR/TEAMALL makes substantive sense based on these arguments. It is noted that this particular covariance is only significant at the country level.

At the individual level, the negative HIERAR/WELFARE covariance indicates that as employee preference for hierarchical remuneration increases, employee preference for additional family welfare benefits decreases. This can be translated into associated value constructs PDI × MAS. This inverse relationship was first identified by Hofstede (1991) and is further supported by the multilevel data. Hofstede cited the family unit as an example where large power distance and small masculinity stands for “the norm of a dominant tough father and submissive mother, although also fairly tough, is at the same time the refuge for consolation and tender feelings” (1991, pp.87). This theoretical argument supports the observed covariance at the individual level of HIERAR/WELFARE.

Finally, PENSION/WELFARE suggested a positive covariance at the individual level, which may be interpreted as meaning that as employee preference for a pension plan increases, so does employee preference for increased welfare benefits for dependents. Both are associated with remuneration elements that insure against future adversity. This covariance is weak at best at the individual level and not significant at the country level. In other words it doesn’t matter which country data set is considered; there is no covariance between pension plan preference and welfare benefit preference. This is not too surprising as pension plan is entirely future oriented and welfare benefits have both a present and future connotation.

The relationship does not achieve high levels of significance or total effect, hence reducing its importance in the overall model.

5. Conclusions

Findings from the data presented in this paper have both substantive and methodological implications. Both the multilevel and multivariate multilevel results suggest that country level effects account for a greater percentage of the variance than individual level effects across all five remuneration constructs and across all ten countries included in this study.

Estimates of the variance/covariance coefficients in the response variables at the country level are very similar in magnitude, suggesting that none of the response variables dominate the model. Hierarchical remuneration, pension, welfare benefits for dependents, teampay and equal pay allocation for all team members contributed equally to the HLM.

The individual response variables were analyzed on a single variable basis before running a multivariate model, which included all five response variables. There is minimal interaction between variables as established through a comparison of the estimated effects for each variable run individually versus the estimated effects for each variable within the multivariate model. When TEAMPAY was run as an individual model the country level effect was 76.3%. When TEAMPAY was analyzed within the multivariate model the country level effect changed less than 1% to 75.6%. Similarly none of the other multivariate interactions introduced changes in effect size of greater than 1%. These findings suggest that the response variables are robust measures, showing minimal covariance.

From a methodological perspective, the results from the multilevel, structural equation model of the data emphasize the importance of accounting for inter-relationships, which in turn affect the remuneration preferences of individual employees. Valuable information about remuneration preferences at both the country and individual level was obtained by simultaneously accounting for the multilevel and interdependent structure of the data.

This study includes a limited sample, but continued expansion of the national culture index database will contribute to a better understanding of work value systems beyond just remuneration. The number and choice of countries within this study does not guarantee generalization of the findings to the rest of the world. Multi-company data would add robustness and allow for further investigation of the hierarchical nature of national culture data. Similarly including a variety of job family data would enhance the explanatory power of the model.

Despite these limitations, this paper has demonstrated that multilevel analyses are essential if statistical and substantive conclusions are to be determined.
The structural HLM models in this study indicate that more than 70% of the variance can be attributed to country level effects, rather than to individual level effects.

These results suggest that national culture values account for most of the variance in employee remuneration preferences, thereby providing an important design consideration for management. Organizations need to consider the impact of national culture on compensation practices, not only with regards to their potential to motivate but also in consideration of their systemic nature (Lawler, 2003; Schuler & Rogovsky, 1998). The theory and evidence as discussed in this paper implies that preferences for different approaches to remuneration need to be recognized as culturally variable. This research argues that there may be a need to de-parochialize the conception of remuneration as a motivational tool in the workplace.

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