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Effect of Work Group Processes on Work Place Satisfaction and Performances - Evidence from University Class Groups Studies.

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Abstract: *This study investigates the impact of work group composition on work place satisfaction and performances using results from experimental study of students from three groups in University of Gothenburg Sweden management class working groups. Work group composition is measured here by considering factors such language, nationality and culture among group members. Language had a positive and significant effect on workplace performance; this was also probably true since effective communication skill was likely to make working groups work in a hitch free manner. While culture on the other hand has a negative and statistical significant effect on workplace satisfaction, this was likely to be true since punctuality, individual comportment, and work ethics were likely factors that member of working groups take seriously when working as a team in groups. The horizontal flow of information (knowledge transfer) was also found to depend on work group output performances. This was reasonable, since how efficient work groups and sub groups within the groups efficiently carried out their tasks will depend on the horizontal flow of information in groups. The evidence presented in this study shows that issues of nationality was not relevant to individual group members overall satisfaction in participating in groups nor was it vital to overall group performances. The results could be beneficial to organization management particularly those that wish to improve overall output productivity since class work groups experimental studies are a miniature study of organizations, the implications of this study is that language and culture could improve organizational output productivity substantially since language could contributes significantly to organizational performances and work ethics is also likely to create workplace satisfaction which can contribute in a significant way to organizational output.*

Keywords: *Knowledge transfer, Work group performance, Work group satisfaction.*
JEL Classification - J81, J82 J89.

I. Introduction

The effect of group processes on output productivity is one of great concern to managers and policy makers in many organizations. This paper studies working processes dynamics since the need to increase output productivity and for organizations to maximally utilize their human capital in an efficient manner are likely the reasons why managers and policy makers in organizations pay strong attention to group processes. Many factors are responsible for both the formative, inner working and work output delivery of groups today, these are known to be responsible for the efficiency and dynamics that affect work group processes. Some include language, culture and country of origin.

Language can have strong consequences on group performances since understanding each other within groups is likely to affect the pace of doing work in groups, while culture is likely to affect group specific work ethics such as individual comportment, punctuality and group internal interaction. Nationality will affect groups in formative stages since individuals are likely to want to work in group they share national ties with thus the issue of national identity is likely to facilitate group formative process and less likely to affect group performances in a significant manner on the long run. We identify these three variables as factors that capture the effect of working group processes. Other secondary factors that could affect group processes include gender composition of groups, differences in age of group members, group leadership, group working length and work group organization.

"While issues of group efficiency and cohesion continue to have strong consequences on group outcomes, other more pressing issues such as initial endowment of knowledge could have strong effects on organizational competitive advantage. This is often reflected in the high performances in of workgroups that have in them high level of residual endowment, therefore the assumption that knowledge is embedded in workers could in fact be exogenous so firms in order to efficiently appropriate the value of their manpower are likely to find efficient environment or working conditions where these workers are likely to maximize their

potentials. The study of working group processes in this paper could have useful implications for organizations that wish to improve the overall working processes of divisions and departments in their organizations in an efficient manner with the aim of improving output productivity".

Source - Authors conclusion drawn from student group experiences obtained from individual discussions

Knowledge spill-over within groups is also a source of concern to scholars of organizational management who wish to investigate which environment knowledge sharing is most effective. Group process is likely to offer additional information into how knowledge is shared within groups so as to bring to a better understanding the flow of information and knowledge in organizational working structures. The aims of this paper are to investigate the impact of working group processes on work place performance, secondly to also investigate the effect of working processes on work place satisfaction and finally to determine the determinants of knowledge transfer in work groups. Past literature such as [1] have investigated the effect of group diversity on performance and knowledge spill-over using a group of college student class performances, but few have investigated the effect that group processes such as its formative, working and knowledge sharing processing can have on workplace satisfaction and performances. This study intends to contribute to existing literature through studying the dynamics between group working processes, organizational output and workers job satisfaction.

The results using maximum likelihood estimation method show that language was a significant factor that affects work group performances in a positive manner, while culture had a negative significant effect on workgroup members' satisfaction. Knowledge spill-over was found to depend significantly on workgroup output performances even though the length of interaction among workgroups had no significant effect on knowledge transfer in this study. The rest of this paper is divided into five sections they include literature review, some theory, data and variables, empirical analysis and the concluding sections.

II. Review Of Literature

In this section we review existing literature on the subject matter. Several factors are responsible for the lack of empirical studies on the subject matter (i.e. the effect that working group processes can have work place performance and satisfaction). Some of these include the lack of quantitative data for such studies to be carried out, what type of experimental studies will be most suitable for these kind of analysis and lack of record of group working processes in many organizations. Previous studies such as [2], Heckman and [3], [4] have investigated the effect of workplace diversity on organizational performance using firm level aggregated statistics.

Others such as Hansen, [1], find that age and diversity are significant factors that affect workplace diversity and knowledge spill over in certain team environments but do not find evidence that racial or ethnic factors have any significance. However other organizational behavior scholars often focus on group composition that are responsible for the inner working processes of teams such as language, culture, nationality and race that are salient (see , [5], [6], [7], [8], for further discussion and theoretical studies) . Significant problems are likely to occur in the study of diversity due to its salient undertone, since it is difficult to separate the effects of diversity from individual characteristics such as ability, personality and knowledge.

This makes it difficult to explicitly define the impact of diversity on workplace performance and secondly in order to explicitly study the impact of diversity on group performances most studies focus on group processes such as commitment, language and conflict to understand the impact of diversity on work group performances. There however exist some limitations to this approach since it does not capture other factors such as educational levels, functional background and personality.

Other empirical studies such as [9] have also revealed that peer effect is likely to have strong significant effects on work groups outcomes and that groups with female participants are less likely to perform as well as groups with male participants in extremely competitive circumstances. This is supported further by studies carried out by [10][1] who conducted extensive studies using controlled experiments and find out that work output performances changes when work environments shifts from a less competitive one to a more competitive environment.

This paper contributes to the body of existing literature by building on past literature, and by offering the further incite as to how group working processes are likely to contribute towards work group members' satisfaction and organizational output performances, while shedding more light on the effect of work group processes on knowledge sharing in groups by combining case studies with empirical results so as to obtain significant evidence for strong management considerations.

[1] The paper by Rustichini investigates impacts of shifts in environment on workgroup efficiency particularly the competitive influences attributable to workplace environment.

III. Theory and Methodology

According to [11] groups can be characterized as a collection of people bound together by some common experience or purpose, or who are interrelated in a micro-social structure e.g. a firm or organization, or who interact with one another. He stated further, that it may be sufficient to say that when people also share some conception of themselves as belonging to the same social unit they are in fact a group. A group process often begins in its formative stages, where little work occurs and members get to know one another and learn how to operate as a group [12].

They tend to be polite and tentative with one another and compliant toward the leader and often feel uncomfortable and constrained because they are unfamiliar with other members (ibid). [12] also argued that group members are usually uncertain about how to act, and they spend time planning how to do their tasks. According to [12] the stage of forming ends once they are comfortable interacting with each other. Organizations are likely to be made up of groups or department who interact with one another to achieve its overall objective. The theory presented below takes into cognizance formative and working stages of working groups. The theory depicts a case where work group efficiency will improve organizational output performances with the aim for this result to be particularly useful for management and human resources divisions in firms, since this could actually enter firm specific output maximization strategy which can have strong implications for firms both in the public and private sectors. The theory that is presented in this study is one in which firms will try to maximize output productivity by ensuring diversity in organizational work groups. Therefore workgroup performance will depend on age (a), ethnic or racial diversity (d), work group leadership (l) and other exogenous factors (z) which can be written as $f_i(a, d, l, z)$. The expectation is that organizations will continue to try, to improve output productivity through efficient management of different work groups until equilibrium occurs such that further efforts and investment to promote work group efficiency will not lead to increase in firm's output performances. This can be defined as the equilibrium condition where the total cost of increasing efficiency in respective workgroups is given as $TC_i = (a, d, l, z).X_i$ which is equal to the marginal cost $MC_i = (a, d, I, z)$. This is also the profit maximization point (X_i^*) where $MR_i = MC_i$. Therefore work group performance can be written as a positive function of age $a_i(p_i)$, and model is such that work group performances will depend on age differences which is likely to affect group in formative stages as well as in the working stages since individuals are likely to feel comfortable with working with peers of same age, the level of diversity which can affect work group performances in a significant manner, work group leadership which is likely to affect output performances through work group leader ability to control groups and ensure efficient flow of information among group members and other exogenous variables that affect work group output in organizations. Based on this, a list of hypothesis is presented below to be tested in this study.

Hypothesis #1.) Language may affect work groups performances depending on the overall impact of language in workgroups and in organizations in general.
Hypothesis #2.) Workgroup leadership may affect work group performances in a positive or negative manner depending on the method of selecting group leadership in organizational workgroups.
Hypothesis #3.) Gender may affect workgroup performance in a positive or negative manner depending on how sensitive group members are to gender composition in organizational workgroups groups.
Hypothesis #4.) Individual Culture may affect work group satisfaction in a positive or negative manner depending on how issues of punctuality, comportment, and work ethics affect individual behavior in groups.
Hypothesis #5.) Workgroup working length may also affect knowledge sharing in a positive or negative manner depending on the effect of working lengths on group performance.
Hypothesis #6.) Working group organization is likely to affect work group members satisfaction in a positive or negative manner depending on the effect of group organization on members.
Hypothesis #7.) Working group length is likely to affect work group satisfaction depending on the duration group members are willing to work in groups.

IV. Data, Empirical Analysis And Results

A.) Data And Sources

In this paper we relied on questionnaires and interviews. A total of 31 questionnaires were handed out and responses received from all 31 persons. The respondents were student working in academic groups in Gothenburg University Sweden, of these 31 respondents only one has worked in academic groups as well as formal work groups outside school. With the expectations that, interactions in groups is a form of social relations as such the results of academic work groups in school settings may not differ significantly from those in organizational work groups, allowing this study to have useful implications for organizations.

In the course of this survey a range of issues were touched to capture the subject of this study such as factors that affect work group members satisfaction, work group output performances and knowledge transfer in

groups. Respondents were asked to either agree, disagree or remain indifferent to questions of nationality, culture, language, leadership, gender, age, overall work satisfaction, work length and flow of ideas in groups. The results are presented in table 1 below. Based on this a quantitative data was constructed using dummy variables and assigned a value of 1 to cases where respondent agreed and 0 in cases where respondent disagree or where indifferent since indifference was assumed to be an either a weak agreement or weak disagreement as the case maybe, and was likely not have a strong positive or negative significant impact on the subject question. Also presented is the descriptive quantitative data in table 2 below.

Table1: Representation of students' responses about factors that affect groups work

	Respondents	Agree	Disagree	Indifferent	% agreed	%disagreed	% indifferent
Nationality	31	27	1	3	87.10%	3.23%	9.68 %
Culture	31	12	11	8	39%	35.50%	25.50%
Leadership	31	26	4	1	83%	12.9%	3.23%
Gender	31	0	30	1	0%	96.78%	3.23%
Language	31	19	6	Others	61%	19.35%	Others
Age	31	14	10	7	45%	32%	22.58%
Satisfied group	31	21	3	7	67.74%	9.68%	22.58%
Ideas shared	31	30	1	0	96.78%	23%	0%
Work length	31	21	3	7	67.7%	9.68%	22.58%

Source: Questionnaire served Gothenburg University Sweden, Students Winter Class of 2011

Table-2 Descriptive Statistics

Variable	Observation	Mean	Std. Dev	Min	max
Work group performance	31	0.65	0.49	0	1
Work group satisfaction	31	0.65	0.49	0	1
Language	31	0.61	0.50	0	1
Nationality	31	0.87	0.34	0	1
Culture	31	0.39	0.50	0	1
Work group length	31	0.71	0.46	0	1
Work group organization	31	0.58	0.50	0	1
Age differences	31	0.45	0.51	0	1
Working group leadership	31	0.58	0.50	0	1
Gender	31	0.13	0.34	0	1
Knowledge transfer	31	0.71	0.46	0	1

Source: Authors Compilations

The dependent variables used in this study are work group performance, work group satisfaction and knowledge transfer. To capture working processes we use three variables which are language, nationality and culture. While language and culture will affect working processes in group working stages the expectation is that nationality will only capture working process effect in the early formative stages of groups. Other exogenous variables that is expected to affect work group performances, work group satisfaction, knowledge transfer, work group length, work group organization, age differences, work group organization and gender. However in this study gender was dropped due to issues of multi co- linearity in the model specification since this was likely to lead to misspecification. Finally a variable developed for effective knowledge transfer and to assume that information flow in work groups will occur in an environment where ideas are shared in a language that group members have good command of, therefore interacted ideas was shared with language to obtain effective knowledge transfer. A table of correlation is included in Table 6. In the appendix since this shows the predicted signs of all variables used.

B.) Empirical Analysis And Equations

In this empirical section task is to determine if indeed workgroup process affect output performances of groups as well as to investigate if workgroup processes has any effect on work group satisfaction. Another issue that will be addressed is the possible factors that affect knowledge transfer in groups. To do this maximum likelihood estimation is used. The reason for this is that it allows for understanding of the impact that various factors can have on the subject under study. Maximum likelihood estimation is an optimization process that assumes distributional normality and expects that the expected value will converge to the mean of the distribution.

The test for normality was done using the Shapiro-Wilk test for normality and accepted the null hypothesis that the variables follow a normal distribution (see p-value (with p-value >0.10) in Table 4. In the appendix) although this did not hold for three variables (nationality, work group leadership and knowledge transfer which was one of the limitation of the paper) in this model specification that do not conform with the

assumption of distributional normality since this could lead to misspecification of the regression estimating leading to bias in our findings [14] for further discussion on how to determine distributional normality. While using questionnaires offers some insights into the questions under discussion the model specification as presented in this case is likely to show the impacts that factors that affect the subjects question is likely to have on the subjects under discussion.

i.) Effect of working processes on work group performance

In determining if factors that affect working processes has an impact on work group performance we bear in mind that several other factors also interplay with working process to determine the overall dynamics that is responsible for the variation in work performance. As stated earlier, to capture work processes we use factors that determine working processes in groups such

$$(1.) \qquad Work\ group\ Performance_{jk} = \beta_0 + \beta_1 X_k + \beta_2\ Working\ processes_k + \varepsilon_k$$

as language, culture and nationality as exogenous variables while the list of other exogenous variables $\boldsymbol{X_k}$ include working length of groups, work group organization, age differences, knowledge transfer and work group organization. The model is presented in equation 1. It is expected the various measure of work group processes will affect work group performances depending on how they impact work group performances therefore the expectation is that work group performances will vary with changes in work group working process. This is reasonable since issues of nationality that will like affect groups in the formative stages and other issues such as language and culture which are needed for effective communication and good working group cohesion will influence work group output performances. However the assertion here is that work group performance will depend on other factors such as work group length, age differences, effective leadership, work group organization etc. since the hours of work spent working together coupled with individual perception and activities in sub groups within groups are likely to affect work group performances in a reasonable way. This allows for the control of additional factors that are likely to affect work group output performances.

ii.) Effect of working process on work group satisfaction

In this case the impact of group working processes on workplace satisfaction was examined. It is an expectation that group working processes will affect work group members satisfaction but work group satisfaction will also depend on a host of other exogenous factors $\boldsymbol{X_k}$ such as working

$$(2.) \qquad Workplace\ satisfaction_{jk} = \beta_0 + \beta_1 X_k + \beta_2\ Working\ processes_k + \varepsilon_k$$

group length, work group leadership, work group organization, age differences and work group organization. The model is also presented in equation 2. This is also reasonable since although work place will be affected by group working processes such as language, culture and nationality, other factors such as work group organization, leadership, work group length and age differences are likely to affect individual worker satisfaction in groups. These additional factors allow also for the control of likely factors that is suspected will affect work group members satisfaction.

iii.) Factors that affect knowledge transfer in working groups

Finally the last model specification provides insight as to factors that determine the horizontal flow of

$$(3.) \qquad Knowledge\ Transfer_{jk} = \beta_0 + \beta_1 X_k + \varepsilon_k$$

information in groups. In this case the listed variables used as control include
culture, nationality, working length of groups, work group leadership, age, differences and work group organization. The model is presented in equation 3. It is expected that overall group performances is likely to determine how information flow in groups. Since it is likely that groups, with high performing output, are likely to be the most efficient in knowledge and information, dissemination, among members. This will be particularly true if output performance in groups therefore significantly affect work group output, it is likely that working length is also likely to exert a weak effect but this however depends on how groups efficiently use the working time to obtain desired group goals.

C.) Results

The results are presented here the method of estimation relied on is the maximum likelihood method of estimation and the outcome of the regression is compared with the observations obtained from the questionnaires used. Hence the quantitative variables were developed from the qualitative results obtained from the questionnaire using dummies to capture the effects that variables exert in groups by discussing with students who participated in groups. The regression results are presented in Table 3. As stated earlier, the normality test was carried out for the data used since maximum likelihood is an optimization method that assumes distributional normality, the results of the normality test is attached in the appendix. The overall results we present examines the effects that work group processes has on work group performances using language, culture

Table 3.Regressions Results

Dependent Variable Method of Estimation	Work group Performance MLE (1)	Work group satisfaction MLE (2)	Effective knowledge transfer MLE (3)
Language	0.86 (.12)***	0.17 -0.15	
Culture	-0.48 -0.24	-0.11 (.31)***	0.25 -0.34
Nationality	0.21 -0.22	-0.99 -0.28	0.99 (..31)
Work group leadership	0.14 -0.21	0.78 -0.27	-0.96 -0.36
Work group organization	0.69 -0.28	0.76 -0.36	0.12 -0.39
Age differences	0.51 -0.22	0.22 -0.28	0.17 -0.3
Work group length	-0.2 -0.15	0.22 -0.55	0.1 -0.21
Knowledge transfer	0.74 0.21	0.7 0.27	
Work group performance			0.83 (.16)***
Observation	31	31	31

Note: Notes: Coefficients listed with standard errors in parentheses. *, ** and *** refers to significance at the 1%, 5% and 10% levels, respectively

and nationality as measures of work group processes plus other exogenous variables that is suspected to affect work group performances show that language had a strong significant and positive effect (language was contributing 86 percent points to work group performance) on work group performance (see Table 1 Column 1). The implication of this result is that language was probably increasing work group cohesion in a positive manner thereby allowing work groups to perform better in an efficient manner. The results obtained from the regression which also tested the effect of working group processes on work group satisfaction also shows that culture had a negative significant effect on work group satisfaction, since culture was reducing work group satisfaction by 11 percentage points (see Table 3 column 2). The implication of this result is that differences in issues such as self-comportment, attendance to meetings and individual work ethics that are known to be affected by country specific culture was probably causing disaffection in groups. However other exogenous variables did not exert a significant effect on both work group performances and satisfaction.

The results of the third regression, which examined the determinants of horizontal transfer of knowledge in groups show that work group output performances had a positive significant effect on knowledge transfer in groups (with work group performance responsible for 83 percent of horizontal information flow in groups). These results could have strong implication for organizations that are having divisions and departments since the result depicts that effective communication could have strong effects on organization output performances while culture on the other hand could have effect on work place satisfaction. Also horizontal knowledge and information flow are likely to be prevalent in divisions with strong output performances. Based on these results the followings answered the hypotheses that were posed earlier in this study.

Hypothesis #1.) The first hypothesis is accepted since language affected work groups' performances, it was likely that language was probably promoting cohesion in groups making group members to work better in an efficient manner.

Hypothesis #2.) The second hypothesis is rejected since workgroup leadership did not affect work group performances significantly this was either due to disagreement in the method of selecting group leadership in work groups.

Hypothesis #3.) The third hypothesis is rejected since gender did not exert a significant effect on workgroup performance. It was likely that issues of gender composition in groups had little or no effect in work group formative and working stages therefore they were not key concerns to group members.

Hypothesis #4.) The fourth hypothesis is accepted since Culture had a negative effect on work group satisfaction. It was likely that punctuality, comportment, and work ethics were contributing to dissatisfaction in groups.

Hypothesis #5.) The fifth hypothesis is rejected since work group working length did not affect knowledge sharing in a significant manner. Knowledge sharing was in fact affected by work group output performances. This was reasonable since groups with high output performances were likely to have been more efficient in disseminating information and ideas horizontal among group members.
Hypothesis #6.) The sixth hypothesis is rejected since working group organization did not have a significant effect on work group members' satisfaction.
Hypothesis #7.) This hypothesis is also rejected since working group length did not affect work group satisfaction. It was likely that issues of time length did not matter in cases were groups were effectively delegating duties among themselves in sub groups thereby making them work more efficiently in smaller cells.

Analyses of questionnaire results

Further comparison was done with the results obtained from the regression and the results obtained from questionnaires so as to allow gain a better insight as to the factors that have affected inner group working processes.

i.) Effect of language, culture and nationality on group outcomes

From the questionnaires the percentage of respondents that stated that language, nationality and culture had strong effect on group outcomes was 61, 87.1 and 39 percent respectively. The implication of this is that nationality and culture were likely to have the strongest and positive impact on group outcomes however it is not expected for the impact of nationality to be noticeable on group outcome since this only affects groups in the group formative stages and was likely not to have noticeable effects on group workings after their formation. However effect communication was likely to affect group cohesion. The negative response regarding the effect of culture on group outcomes was probably due to the relatively high diversity present among the students population used in this experiment been an international class. It is reasonable to understand why culture will contribute in a negative manner to group satisfaction but not necessarily reducing group output performances since students in working group desire to do well. However one of the limitations of this regression analysis is that, it is assumed that those who were indifferent were actually dissatisfied and were probably shy to express their feelings. Therefore it is effectively assumed a total of 61% (35.5+25.5) felt that culture was having a negative effect on group outcome.

ii.) Other factors that affect Group Outcome

Other issues such as age, gender, work group leadership, working length, work group satisfaction and ideas shared (knowledge transfer) respondent where of the opinion that these contributed 45, 0, 83, 67.7, 67.74 and 96.78 percent to work group outcome. This showed that gender and age were not serious issues that work group members considered to have strong positive effect on group outcomes. Instead issues of leadership, work group length, satisfaction and information sharing were likely to have stronger impacts on group outcomes.

V. Discussion, Policy Implications And Conclusion

Interestingly, this paper provides insights for both college working groups and organizations with divisions and departments on how managing work groups can improve work group output performance, work place satisfaction and the dynamics that affect knowledge sharing horizontally. Improving work place performance could provide organizations with much needed leverage they need to compete adequately in ever increasing competitive business environment while improving work group processes can help in maintaining the satisfaction and morale of the work force. Issues such as work group organization were probably also contributing to other factors such as suitable environment for work and aligning work groups to be in line with organization working mission statements, this could be largely responsible for it not affecting output performance in a significant manner.

Another incite gained from this study is an understanding of what factors are responsible for the horizontal flow of information in organizations, this will be particularly useful for policy makers who wish to understand the dynamics that govern information flow. Even though Work group performance had a significant effect on knowledge transfer the effect that other factors contributed was also probably diminished since other controls such as work group length, work group leadership, age difference are likely to affect not only knowledge transfer but also increase or decrease work group satisfaction, thereby reducing the effect that these controls can have on knowledge transfer in work groups. In a nutshell, the dynamics that govern work group performance differ significantly from that of work group satisfaction, since language had a strong influence on work group performances while culture was of more consequence in attaining increased satisfaction in groups. While on the other hand the ability of work groups and sub groups within work groups to perform assigned tasks efficiently was largely responsible for the flow of information in a horizontal manner in work groups.

In concluding, this paper investigated the effect that work group processes can have on work group performances and satisfaction. It was found that, after considering the three factors that were earlier attributed to be responsible for working processes in groups (i.e. language, culture and nationality), that language had a positive significant effect on work group performances, while culture had a negative and significant effect on work group satisfaction. It also investigated the determinants of information flow (knowledge transfer) in groups and finds that work group output performance was contributing to horizontal information flow in groups. This study is consistent with past literature such as [5], [6], [7] and [8], that state that diversity, culture, language etc. are likely factors that affect organizational output performance, however no evidence was found that culture affects knowledge spill over instead work groups output performance was more relevant in this case.

There is also no reason to believe that behavior of students in working groups will defer significantly from that of workers in a competitive environment since students want to pass as much as workers want to progress in their chosen career, therefore the study of university class work group offers a miniature insight on how human relations in work groups can affect output performances in organization making this study to have strong implications for organizations with divisions and departments. The usefulness of this result is that the management of organizations that pay strong attention to promoting effective communication in their work place are likely to improve their organizational output performances in a significant manner. Managers who wish to also promote work place satisfaction could significantly improve workers satisfaction by ensuring that individual cultural attributes are reduced to a minimum and instead a single organizational culture based on elements that can improve work place harmony and efficiency should be promoted for workers in their establishment to abide by. Management should also pay attention to improving high performance output in groups so that information flow can be maintained in a sustainable manner since this could affect the overall objectives of their organizations. Therefore this study has strong implications for organizational performance in general.

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Appendix

All of the results are shown in the body of the paper. However, as some readers may want to see quantitative data and the results of the normality as such it is provided below.

Appendix A.

Table 4. Shapiro-Wilk Normality Test Results

Variables	#of Obs.	Skewness	Kurtosis	Z	prob>z
Working group performance	31	0.98	0.81	-0.44	0.67
Working group satisfaction	31	0.97	1.28	0.51	0.30
Language	31	0.99	0.46	-1.59	0.94
Nationality	31	0.68	10.59	4.89	0.00
Culture	31	0.98	0.68	-0.79	0.79
Working group length	31	0.96	1.28	0.51	0.30
Working group organization	31	0.99	0.23	-3.35	1.00
Age differences	31	0.99	0.20	-3.35	0.99
Working group leadership	31	0.77	7.47	4.17	0.00
Knowledge transfer	31	0.70	9.89	4.75	0.00
Effective knowledge transfer	31	0.99	0.23	-3.05	1.00

Note this test is only suitable for # of observation n>5 and n< 2000

Stata code: swilk wkgperf wkgsat lang natlity culture wkgleng wkgorg agediff wkglead kntrans effekntrans

Appendix C

Table 6. Correlation of Variables

	W.g.p	W.g.s	Lang.	Natio.	Culture	W.g.l	W.g.o	Age	k.tra	E.k.tra
W.g.p	1.00									
W.g.s	-0.51	1.00								
Lang.	0.93	-0.55	1.00							
Natio.	0.52	-0.27	0.48	1.00						
Cult.	0.59	-0.87	0.63	0.31	1.00					
W.g.l	-0.52	1.00	-0.55	-0.27	-0.81	1.00				
W.g.o	-0.63	0.81	-0.68	-0.33	-0.94	0.81	1.00			
Age	0.67	-0.76	0.72	0.34	0.88	-0.76	-0.94	1.00		
W.g.l	0.59	-0.30	0.55	0.88	-0.30	-0.30	-0.37	0.40		
K.tra	-0.14	0.26	-0.15	-0.07	-0.23	0.26	0.21	-0.20	1.00	
E.k.t	0.87	-0.45	0.94	0.45	0.54	-0.45	-0.59	0.63	0.21	1.00

Note: w.g.p is work group performance; w.g.s is work group satisfaction, Lang. Is language, natio is nationality, w.g.l is work group language, w.g.o is work group organization, k.tra is knowledge transfer, and E.k.tra is effective knowledge transfer.

Appendix c

Table 5. Quantitative dataset used in study

wkgsat	wkgperf	Lang	Natlity	culture	wkgleng	wkgorg	agediff	wkglead	gender	kntrans
0	1	1	1	1	0	0	1	1	0	0
0	1	1	1	1	0	0	1	1	0	1
0	1	1	1	1	0	0	1	1	0	1
0	1	1	1	1	0	0	1	1	0	1
0	1	1	1	1	0	0	1	1	0	1
0	1	1	1	1	0	0	1	1	0	1
0	1	1	1	1	0	0	1	1	0	1
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0	1	1	1	1	0	0	1	1	0	1
1	1	1	1	1	1	0	1	1	0	1
1	1	1	1	1	1	0	1	1	0	1
1	1	1	1	0	1	0	1	1	0	1
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1	1	0	1	0	1	1	0	1	0	1
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1	0	0	0	0	1	1	0	0	0	1
1	0	0	0	0	1	1	0	0	0	1

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