An Empirical Study of the Simplified Categorization -Elaboration Model of Workgroup Diversity-

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Hajime Ushimaru
Naomi Ushio
Shima Nagano
Bongju Kim

Introduction

This study seeks to examine the effect of social categorization induced by demographic diversity on the relationship between workplace diversity and performance by constructing a simplified model of the categorization–elaboration model (CEM) developed by van Knippenberg et al. (2004).

According to Mazur (2014), the issue of diversity in relation to the workplace was initially concerned about compliance with legal standards for gender and minority ratios and less about performance. Today, however, the issue has shifted to how to manage diverse factors, including cultural background, religion, age, education, lifestyle, and working style, in addition to gender and race, and how to link these to innovation. To address the problems of globalization, labor shortage, and the creation of new innovations, diversity management has become an important issue for Japanese companies, not only in terms of utilizing the female labor force but also in terms of hiring and managing a wide range of human resources with different races, languages, values, etc. (Ushimaru and Mehran, 2022 forthcoming).

However, diversity studies in Japan have largely focused on gender studies, with few studies having considered other diversity factors such as race, age, work experience,

expertise, and values (Masaki and Muramoto, 2017; Masaki, 2019). Diversity studies in Japan that have included diverse factors other than gender are scattered and few, and these have included the studies of Inui et al. (2014), Taniguchi (2014), and Hayashi et al. (2019).

Therefore, to deepen our basic understanding of diversity, this study divides diversity into demographic and task types and empirically investigates the mechanisms by which these types of diversity affect organizational performance.

Theories, Analytical Frameworks, and Hypotheses

Theories

Williams and O'Reilly (1998) identified three theories that examine the relationship between diversity and organizational processes and performance: social categorization theory, similarity/attraction theory, and information/decision-making theory.

Social categorization theory is based on social identity theory (Tajfel and Turner, 1987); according to social identity theory, when people form their self-concept, they refer to their in-group—the specific social group to which they feel a sense of belonging.　An in-group has attributes and characteristics that are favorable to oneself, and belonging to this group gives one a sense of self-enhancement. In addition, others who belong to the in-group constitute one's extended selves, and their success is one's success, which indirectly increases one's self-enhancement. This heightened sense of self-enhancement leads to patronage of the in-group (Sasaki, 2020).

Social categorization theory suggests that prioritizing the in-group to which an organizational member belongs over the out-group—in other words, patronizing the in-group—creates cognitive biases and conflicts in organizational decision-making and negatively impacts organizational performance. As diversity increases, the number of subgroups there are increases. As diversity increases, subgrouping occurs, and biases such as prejudice against other groups are created. As a result, conflicts arise among many groups, resulting in poor performance. It is important to note that decision-making distortions, such as conflicts, occur when categorization creates cognitive biases, rather than categorization itself.

The degree of social categorization that occurs is determined by three factors (van Knippenberg et al., 2004): the first of which is *comparative fit*, or the degree of difference in

similarity between the group to which one belongs and other groups. The greater the difference, the greater the categorization. Demographic or surface diversity, such as in age, gender, and race, is most likely to cause categorization based on comparative fit because of the large differences in similarity between groups. The second factor that determines social categorization is *normative fit,* or the degree to which an individual's beliefs and expectations conform to the beliefs and expectations of the group to which he or she belongs. Since these take time to recognize, categorization based on normative fit is less likely to occur than comparative fit. Therefore, task diversity or deep diversity (hereafter task diversity), such as beliefs and expectations, is unlikely to cause categorization and can be considered to have little relationship with organizational performance. Finally, the third and last factor that determines social categorization is *cognitive accessibility*. The more recognizable the attribute, such as gender or age, the more likely it is to be used as a categorization criterion. Williams and O'Reilly (1998) argue that demographic diversity, such as in age, gender, and race, has a negative impact on organizational performance because it is easy to recognize and therefore has a high degree of cognitive accessibility and is easily used for categorization.

Similarity/attraction theory argues that people with higher similarity are more likely to be attractive; Byrne (1971) argues that the link between similarity and attraction requires an effectance motivation-a desire to view the environment as meaningful and predictable (Suzuki et al, 2015). In other words, the more we interact with dissimilar people, the more we need to confirm the same aspects of each other, but the more we interact with similar people, the less we need to do so, and the easier it is to achieve an effectance motivation.

According to this similarity/attraction theory, the more similar group members are, the more attractive they find each other, the more cohesive they are, the more effective their communication is, and the higher their organizational performance. Conversely, the more there is diversity, the more negative the organizational performance becomes.

It is possible to integrate social categorization theory and similarity/attraction theory. When diversity is low, the number of people who share similarities, resulting in the formation of large groups, and conflicts are less likely to occur. On the other hand, when diversity is high, the number of similarities among group members decreases, leading to the formation of many small groups, and conflicts are more likely to occur. In this way, social categorization and similarity/attraction theory can be integrated, along with the model of

van Knippenberg et al.[0]. Social categorization theory and similarity/attraction theory can be considered as one theory.

Information/decision-making theory is based on organizational rationality, which holds that when diversity increases, diverse information and knowledge are exchanged and useful information is acquired, which in turn facilitates the creation of innovation. According to this theory, diversity has a positive impact on performance.

The above shows that there are two types of theories that explain the relationship between diversity and performance: those in which diversity has a positive impact on the organization and those in which it has a negative impact. The results of empirical studies have largely shown this.

Meta-analyses by Joshi and Roh (2009) and Horwitz and Horwitz (2007) showed that task diversity such as in knowledge, competence, experience, and values has a positive impact on organizations, while demographic diversity does not and may even have a negative impact in some cases.

Analytical Framework and Hypotheses

Van Knippenberg et al. (2004) proposed a CEM that considers the interaction between social categorization theory and information/decision-making theory. This means that task diversity related to task-relevant information and perspectives can influence the detailed process of task-related information processing, i.e., the exchange, processing, and integration of task-relevant information and perspectives, which in turn can influence the detailed process of creativity and decision-making. This model places the positive aspects of diversity at its center, as it leads to outcomes such as creativity, innovation, and quality of decision-making.

Owing to the complexity of the CEM, it is difficult to validate an analytical model that considers all variables. In fact, most studies have simplified the CEM and used other variables as moderators or mediators. In this study, a simplified CEM (SCEM) is constructed (Figure 1), and the following hypotheses are tested:

Hypothesis 1: Demographic diversity has no direct impact on organizational performance.

Hypothesis 2: Task diversity has a positive impact on organizational performance.

Hypothesis 3: Demographic diversity has a negative moderating effect on the relationship between task diversity and organizational performance.

Hypothesis 4: Demographic diversity has a positive impact on task diversity.

Hypothesis 5: Demographic diversity indirectly affects organizational performance through task diversity.

Figure 1: Conceptual Model of a Simplified Categorization–Elaboration Model
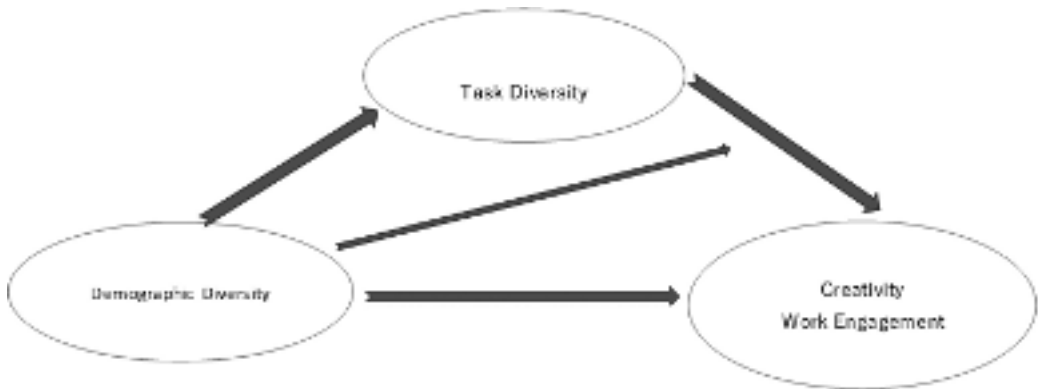
Data and Methodology

Data

The data analyzed in this study were obtained via a web-based questionnaire form conducted with 3,598 employees of a major financial institution, Company B. The survey was conducted over a period of approximately two weeks, from August 4 to August 31, 2021. The questionnaire was designed using Microsoft Forms software. The URL to access the questionnaire was sent to the survey targets via an e-mail sent from the human resources department of the insurance company.

The attributes of the survey respondents are listed in Table 1. The average respondent was in his or her late 40s, and more than half were male or female branch managers and general employees (staff class).

Table 1: Survey Respondents' Attributes

Attributes		No. of Respondents	%
Gender	Male	1625	45.3
	Female	1824	50.8
	Others	139	3.9
Age	19 and below	8	0.2
	20~29	696	19.5
	30~39	702	19.7
	40~49	727	20.4
	50~59	1185	33.3
	60 and above	245	6.9
Job Types	Fulltime	2565	71.8
	Parttime	1008	28.2
Position	Exectuve Officer	39	1.1
	Manager	128	3.6
	Section Chief	609	17.1
	Supervisor	416	11.7
	Staff	1348	37.9
	Others	1021	28.7
Service Years	0~3	1833	51.5
	4~6	603	16.9
	7~9	320	9.0
	10 and above	802	22.5

Measures

Demographic and Task Diversity. The demographic and task diversity measures used in this study were modified versions of the measures developed by Harrioson et al. (1998). Demographic diversity is covered by three items (gender, age, and race), and task diversity is covered by five items (employment status, education/schooling, work experience, expertise, and values). All items are subjective assessments.

The scale employed for these items was as follows: For gender, 1 point was awarded if respondents were overwhelmingly male (about 90%), 2 points if respondents were mostly male (about 70 or 80%), 3 points if there were slightly more males than females (about 60%), 4 points if the number of males and females were similar, 3 points if there were slightly more females than males (about 60%), 2 points if respondents were mostly female (about 70 or 80%), and 1 point if respondents were overwhelmingly female (about 90%). The more equal the ratio of men to women, the higher the diversity. Other items were measured using a 5-point Likert scale, with 1 point for not appropriate and 5 points for appropriate.

Among the measurement scales, that for demographic diversity exhibited a ceiling effect for age and a floor effect for race; thus, these items were excluded from the analysis, and only gender was selected as a measurement item (M = 2.542, SD = 1.029). Meanwhile, regarding the scale for task diversity, since ceiling effects were exhibited for school of origin and education/school history, these items were excluded from the analysis, and the three items of work experience, professionalism, and values were selected as the measurement items.

Next, an exploratory factor analysis of the three items that covered task diversity was conducted. One factor consisting of three items with eigenvalues of 1 and higher was extracted. The three items were as follows: "I believe that the work experience of the members of my workplace is diverse" (λ = 0.812), "I think the expertise of the members in my workplace is diverse" (λ = 0.724), "I think that the values and attitudes of the members of my workplace are diverse" (λ = 0.629). As for convergent validity, AVE = 0.523 and CR = 0.768, which were above the standard values; thus, it is considered that the convergent validity problem did not occur. In addition, discriminant validity was not a problem because there was only one extracted factor.

Based on the above, the total score of the above three items will be used as the representative value for task diversity in this study (M = 9.742, SD = 3.338, α = 0.764 ≒ 0.8).

Organizational Performance. Organizational performance was measured in two ways: creativity and work engagement.

For creativity, the study of Bear (2012) was used as a reference, and a scale consisting of three items was developed for non-technical office workers in Japan. To develop the questions, advice was obtained from two experts. Therefore, there should be no problems in this study with regard to content validity. Through exploratory factor analysis, one factor consisting of three items was extracted (eigenvalue = 2.193).

The three items extracted were as follows: "Discussions among workplace members often result in the creation of creative perspectives, ideas, products, and businesses" (λ = 0.880), "Workplace members share each other's ideas and support each other in realizing them" (λ = 0.674), and "The workplace is full of creative people who come up with opinions and ideas from new perspectives that are the source of innovation" (λ = 0.767).

For convergent validity, AVE = 0.605 and CR = 0.820, thereby satisfying the criterion

values. Discriminant validity was not a problem because there was only one extracted factor.

From the above, the total score of the three items was defined as "creativity" (M = 8.824, SD = 2.890, α = 0.816).

Six items were extracted from the nine-item version of the Utrecht Work Engagement Scale (UWES), which examines the degree of vitality, enthusiasm, and immersion. Through exploratory factor analysis, one factor consisting of six items was extracted (eigenvalue = 3.832).

The six items extracted were as follows: "I feel energized when I work" (λ = 0.777), "When I wake up in the morning, I feel ready to work" (λ = 0.754), "I am enthusiastic about my work" (λ = 0.768), "I feel proud of my work" (λ = 0.748), "I am absorbed in my work" (λ = 0.745), and "I get carried away when I am working" (λ = 0.724).

For convergent validity, AVE = 0.566 and CR = 0.997, which met the criterion values. Discriminant validity was not a problem because there was only one extracted factor.

From the above, the total score of the six items was used to indicate "work engagement" (M = 18.383, SD = 5.583, α = 0.886).

Common Method Bias

The method of analysis employed in this study is susceptible to common method bias because the method of analysis is about human cognitive processes. The typical method to eliminate bias is to conduct separate surveys at different times with the same sample. However, if this method would be difficult to carry out, Harman's single factor analysis test can be employed instead (Podsakoff and Organ, 1986). This study attempted a single-factor test for the questionnaire items (without factor rotation). Five factors with eigenvalues of one or more were extracted. The first factor had a contribution rate of 27.78%, and because the percentage of variance of all observed variables was less than 50%, it is concluded that common method bias did not occur.

Results

Table 2 presents the descriptive statistics and correlation coefficients of the measured variables. The correlation coefficients show that demographic diversity is not significantly

correlated with creativity and work engagement, but task diversity is significantly and positively correlated, which predicts a significant impact of task diversity.

Table 2: Correlations, Means, and Standard Deviations

		1		2		3		4	M	SD
1	Creativity	1.000							8.824	2.890
2	Work Engagement	.377	**	1.000					18.383	5.583
3	Demographic Diversity	.014		.023		1.000			2.542	1.029
4	Task Diversity	.323	**	.187	**	.079	**	1.000	9.742	3.338

*** p<.001, ** p < .01, * p < .05, + p < .10

To test Hypotheses 1, 2, and 3, a hierarchical (multiple) regression analysis was conducted in which the objective variable was creativity, and the dependent variables were demographic diversity, task diversity, and the interaction term between demographic and task diversity. The results of this analysis are shown in Table 3. Model 1 is a single regression analysis with only demographic diversity as the explanatory variable for the objective variable; Model 2 is a multiple regression analysis in which task diversity is added as an explanatory variable to Model 1; and Model 3 is the result of a multiple regression analysis in which the interaction term between demographic and task diversity is added as an explanatory variable to Model 2.

1) The following were observed in examining the effect of demographic diversity. When creativity was the objective variable, demographic diversity had no significant effect in all models (Model 1: b = 0.032; Model 2: b = -0.035; Model 3: -0.033). In addition, demographic diversity did not have a significant effect on work engagement in all models (Model 1: b = 0.088; Model 2: b = 0.013; Model 3: b = 0.011).

Therefore, Hypothesis 1, "Demographic diversity has no direct impact on organizational performance," is supported.

2) The following were observed in examining the effect of task diversity. When creativity was the objective variable, task diversity had a significant positive impact (Model 2: b = 0.277, p < 0.01; Model 3: b = 0.277, p < 0.01). Task diversity also had a positive and significant effect on work engagement (Model 2: b = 0.309, p < 0.01; Model 3: b = 0.310, p < 0.01).

Thus, Hypothesis 2, "Task diversity has a positive impact on organizational

performance," is supported.

3) The following were observed in examining the interaction effect of demographic and task diversity.The interaction effect had no significant impact on creativity (Model 3: b = 0.013). It also did not have a significant effect on work engagement (Model 3: b = -0.018).

Thus, Hypothesis 3, "Demographic diversity has a negative moderating effect on the relationship between task diversity and organizational performance," is not supported.

4) The effect of demographic diversity on task diversity was examined. The results of the single regression analysis with task diversity as the objective variable and demographic diversity as the explanatory variable showed that task diversity had a significant positive impact (b = 0.239, p < 0.001).

Thus, Hypothesis 4, "Demographic diversity has a positive impact on task diversity," is supported.

5) Since Hypotheses 1, 2, and 4 were supported, while Hypothesis 3 was not, a mediation analysis was attempted in a way that did not introduce the interaction effect (demographic x task) as a variable. In other words, the mediation effect of task diversity was confirmed by measuring the effect of task diversity-mediated demographic diversity on organizational performance (creativity and work engagement). Table 4 shows the results of the tests using the Sobel, Aroian, and bootstrap methods. It can be seen that the results were significant for all methods, indicating that there was a mediation effect.

Therefore, Hypothesis 5, "Demographic diversity indirectly affects organizational performance through task diversity," is supported.

Table 3: Regression Analysis for Creativity and Work Engagement

Explanatory Variables \ Objective Variables	Creativity			Work Engagement			Task Diversity
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	
Intercept	8.818 **	8.818 **	8.814 **	18.389 **	18.388 **	18.393 **	9.137
Demographic Diversity	0.032	-0.035	-0.033	0.088	0.013	0.011	0.239 ***
Task Diversity		0.277 **	0.277 **		0.309 **	0.310 **	
Demographic × Task Diversity			0.013			-0.018	
R^2	0.000	0.103 **	0.103 **	0.000	0.034 **	0.034 **	0.005 **
Mediating effec test (Z-value)							
Sobel		4.242 **			4.036 **		
Aroian		4.237 **			4.022 **		
Bootstrap		4.084 **			3.904 **		

***p<.001, ** p < .01, * p < .05, + p < .10

Discussion and Conclusion

In this study, a simple elaboration model—i.e., a simplified version of the CEM by van Knippenberg et al. (2004)—was developed and empirically tested to analyze the impact of social categorization caused by demographic diversity on the relationship between diversity and performance in the workplace. Five hypotheses were formulated. A questionnaire survey was conducted with 3,598 employees of a major financial institution, and their responses were analyzed. In the end, the following four hypotheses were supported:

Hypothesis 1: Demographic diversity has no direct impact on organizational performance.
Hypothesis 2: Task diversity has a positive impact on organizational performance.
Hypothesis 4: Demographic diversity has a positive impact on task diversity.
Hypothesis 5: Demographic diversity indirectly affects organizational performance through task diversity.

The results of testing Hypotheses 1 and 2 in this study are consistent with the results of meta-analyses by Joshi and Roh (2009) and Horwitaz and Horwitz (2007), who claim that demographic diversity has no or a negative impact on organizational performance, while task diversity has a positive impact. The results of this study support existing studies and can be considered as a contribution to diversity research.

In addition, the results of testing Hypotheses 4 and 5 revealed that the higher the demographic diversity, the higher the task and the higher the organizational performance. In this study, only the gender ratio in the workplace was used as a valid measure of demographic diversity. Therefore, this result can be interpreted as indicating that the more equal the gender ratio in the workplace, the more the workplace is composed of people with diverse work histories, expertise, and values, resulting in an increase in organizational performance. To date, no studies have revealed that demographic diversity (in terms of gender diversity[0]) has a positive impact on task diversity.

This finding can be seen as a contribution to diversity research.

However, it would be a simplistic interpretation that task diversity increases with higher demographic diversity. This is because the surveyed organization may have a

system of human resource practices that consciously places men or women with diverse work histories, expertise, and values in the workplace. This point needs to be confirmed through interviews with the surveyed organizations and will remain an issue for our future research.

Hypothesis 3, "Demographic diversity has a negative moderating effect on the relationship between task diversity and organizational performance," was not supported. There was no difference in the positive relationship between task diversity and organizational performance, regardless of whether demographic diversity was high or low. This indicates that even though demographic diversity increased, cognitive bias did not occur, and conflicts did not arise.

In this regard, the inclusion climate may be a factor in resolving conflicts. Inclusion climate refers to employees' perceptions of the workplace treating employees fairly, respecting individual differences, and their involvement in workplace decision-making (Nishii, 2013).

Ely and Thomas (2001) state that in workplaces with a high climate of inclusion, "learning and integration" is achieved. This means that organizational learning is facilitated by the inclusion of various opinions, and group integration is achieved by balancing group assimilation and self-identity through fair treatment and respect for differences. The surveyed organization may have had an inclusive climate. The inclusion climate is a new issue that needs to be studied in the future.

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