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INFLUENCE OF WORKFORCE DIVERSITY ON RATIONAL DECISION-MAKING IN IT COMPANIES: A STRUCTURAL EQUATION MODELING (SEM) ANALYSIS

Ms Vaishali Verma
Assistant Professor I Business Institute,

Dr Santhi Narayanan
Associate Professor, Sharda University

Dr Daleep Parimoo
Professor in Practice, Manav Rachna University

Abstract

This paper provides an analysis of the effects of workforce diversity on rational decision-making within information technology (IT) organizations, postulates and tests a structural model in which surface level (demographical) and deep level (cognitive/functional) diversity, have a direct and indirect impact on rational decision-making through two organizational mediators inclusive organizational climate and task-related cognitive conflict. Based on the theory of social categorization, classification-elaboration model (van Knippenberg et al., 2004) and the theory of bounded-rationality (Simon, 1955, 1979), they put forward seven hypotheses and tested them with the use of covariance-based structural equation modeling (SEM). Since the scale of a primary survey of IT employees was out of reach within the framework of this research, the illustrative empirical data is a simulated data set (N = 379) created to fit a five-factor measurement model that was pre-specified; this process and limitations are made transparent in the Method section, and the data is not to be understood as reflecting actual organizational data. The measurement model was found to have high Discriminant and convergent validity (composite reliability >.80; average variance extracted >.50 across constructs) and the structural model fit the data well, 72(201) = 245.72, p =.017, CFI =.987, TLI =.985, RMSEA =.024. Surface-level diversity had a positive relationship with inclusive climate (b =.37, p=.001) and no relationship with cognitive conflict (b=.06, p=.001); Deep-level diversity was positively correlated with inclusive climate (b=.29, p=.001) and cognitive conflict (b=.38, p=.001). The two mediators, on their part, positively forecasted rational decision-making (b = .41 and b = .24, respectively, p <.001), and deep-level diversity had a small positive direct influence (b =.11, p =.10). The model was used to explain 32.5% of the variance in rational decisions making. The results demonstrate the operationalizability of diversity-management research based on SEM and the possibility that organizations interested in promoting the quality of managerial and technical decision-making can be helped by fostering the development of inclusive climates and directing cognitive diversity into productive task conflict and restricting the implementation of pure demographic diversity programs that are not supported by the inclusion-oriented practice. Discussed are implications to theory, practice and future primary-data research in the IT sector.

Keywords: workforce diversity, level of diversity, atmosphere of inclusivity, variety at the surface level, cognitive conflict, rational decision-making, structural equation modeling, information technology

1. Introduction

The environment of the organization in information technology (IT) industry is one that experiences a high rate of technological transformation, sourcing of global talent and multifaceted and knowledge intensive decision making. The demographics and cognitive heterogeneity of IT companies have also increased significantly within the last twenty years due to globalization, telecommuting, and active diversity-promoting initiatives that unite workers that are of different ages, genders, nationalities, functional backgrounds, and professional expertise (Stojcic et al., 2019). This increased heterogeneity has sparked a new wave of scholarly and managerial interest in an old question: does more diverse workforce yield superior decisions?

The connection between diversity in workforce and organizational performance has been researched, but the results have been inconclusive. Reports have been made that diversity leads to greater degrees of originality, inventiveness, and a better caliber of decisions by expanding the range of views and information that can be accessible to groups involved in decision making (Cox and Blake, 1991; van Knippenberg et al., 2004) although others have reported that diversity generates greater levels of relational friction, slows the speed at which a decision can be made and in some cases can actually reduce the quality of decisions made when not managed (Jehn et al., 1999; Mehari et al., 2024; Zhang et al., 2024). This two-sidedness, which is sometimes known as the double-edged sword of diversity (Homan et al., 2007; Voss and Mahalingaiah, 2023), implies that the diversity-outcome relationship does not occur directly, but instead is mediated by organizational mediating mechanisms that either support groups to exploit diverse views or that enable diversity to turn into unproductive conflict.

In this paper, two of these mechanisms are discussed. According to Nishii (2013) and Shore et al. (2011), the former refers to an inclusive organizational atmosphere, which is the degree to which employees believe that the company values their distinct contributions, treats them equally, and considers various viewpoints when making decisions. The second is task-related cognitive conflict which is a conflict on the content of work-related decisions, ideas and perceptions as defined against interpersonal relationship conflict (Jehn, 1995; Jehn and Mannix, 2001). Notably, this research also differentiates between two types of workforce diversity that are identified by Harrison et al. (1998, 2002): surface-level diversity, which comprises readily discernible demographic traits like age, gender, and nationality, and deep-level diversity, which includes less apparent cognitive- and functional-based diversity, such as professional knowledge, experience, and values. Previous studies indicate that these two types of diversity act in varying mechanisms and have varied, and even conflicting impacts on group functioning (Harrison et al., 2002; Trinh, 2016).

Rational decision-making is the outcome of interest in this work and was conceptualized through the tradition of limited rationality developed by Simon (1955, 1979) into a systematic, information-based, and logically consistent process of identifying the alternatives, weighing the consequences, and taking courses of action in the face of cognitive and informational constraints of organizational life. Although IT firms frequently have to make decisions when

time is short and they lack all the information, the extent to which such decisions can be made to bear resemblance to the rational ideal has direct consequences on product quality, project success and strategy.

There are three contributions in this study. To begin with, it combines using the categorization-elaboration model to distinguish between diversity at the surface and deep levels (van Knippenberg et al., 2004). and the theory of limited rationality to develop an integrated structural model to attribute workforce diversity to rational decision making via inclusive climate and cognitive conflict. Second, it models based on structural equation modeling based on covariance (SEM), which is an appropriate method to simultaneously estimate multiple latent constructs and their interrelations and correct measurement error (Anderson and Gerbing, 1988; Hu and Bentler, 1999). Third, to acknowledge the practical limitations of the current study, the authors clearly report the use of a simulated dataset to demonstrate the proposed SEM methodology end-to-end, i.e., by specifying the model used, validating measurement, and estimating the structural parameters, but clearly indicate that the numerical results are not representative of real employees in an IT-sector but are used to demonstrate how the models can work in practice.

1.1 Research Objectives

The particular aims of the proposed study are to: (1) investigate how Diversity in the workforce at both the surface and deep levels affects an inclusive workplace culture and task-related cognitive conflict; (2) investigate how inclusive climate and cognitive conflict impact rational decision-making; (3) investigate the residual direct influence of deep-level diversity on rational decision-making consistent with the proposed mediators; and (4) demonstrate, through SEM, the suggested structural model's overall soundness and suitability in the context of an IT firm.

1.2 Significance of the Study

When it comes to IT companies, where the caliber of technical and managerial decisions is a key success factor, it is of immediate practical interest to determine which organizational conditions the diversity will turn into an advantage in the context of outcome in better decision-making. Regarding the academic literature, the research adds a quantitatively defined, testable structural model, which it has been proposed to fill the gap between diversity-management research, conflict research, and the rational decision-making tradition three literatures that have seldom been combined into a unified set of empirical studies.

2. Literature Review and Hypothesis Development

2.1 Workforce Diversity: Surface-Level and Deep-Level Distinctions

Workforce diversity is the difference among the employees in an organization in terms of various differences that might be classified as demography, cognitive styles within the organization, functional expertise and values (Williams and O'Reilly, 1998). Harrison et al. (1998) had suggested a powerful distinction between surface-level diversity (differences in overt, biologically based characteristics such as age, gender, and race/ethnicity), which are readily observable, and deep-level diversity, which relates to underlying psychological traits (such as attitudes, values, beliefs, and informational/functional expertise) which are only evident when people interact over time. Another study by Harrison et al. (2002) in a longitudinal analysis of project teams demonstrated that salience of superficial diversity deteriorates when team members interact and get to know each other, and that salience and

impact of deep-level diversity tends to grow with time. This time dynamic aligns with the more general observation that demographic diversity and informational/functional diversity are positively, and at times, negatively correlated with team processes and outcomes (Bell et al., 2011; Trinh, 2016).

Workforce diversity has emerged as a relevant organizational and policy issue in the IT sector in particular. Women are still underrepresented in technical positions across most of the national IT sectors (Stojcic et al., 2019), and the development teams of software programs become more cross-functional, multinational, and multigenerational. Empirical experiments of IT and software-engineering teams have identified that diversity faultlines alignments of various diversity characteristics that divides a team into subgroups may affect project performance in both good and negative ways, depending on their management (Przybilla & Wiesche, 2019; Voss & Mahalingaiah, 2023).

2.2 The Categorization-Elaboration Model and the Double-Edged Sword of Diversity

The CEM, proposed by van Knippenberg et al. (2004), integrates two separate but complementary theories of diversity in the workplace. Diversity, according to the social categorisation theory, heightens in-group and out-group distinctions, which in turn increases the likelihood of group prejudice, decreases trust, and strains relationships. According to the information/decision making school of thought, a diverse group is better able to access and flesh out topic-relevant knowledge, skills, and perspectives via discussion, exchange, and integration, which in turn improves the quality of the group's outputs, including choices. The CEM suggests that the performance-seemingly beneficial or detrimental nature of diversity is contingent on the group- and task-related circumstances that permit elaboration to continue in a productive manner, as opposed to being derailed by the categorizationbiased conditions (van Knippenberg et al., 2004). This paper has a direct connection to the CEM logic in that it places inclusive organizational climate as one of the states where elaborating the different perspectives becomes productive, and cognitive/task conflict as the final process where such elaboration can be seen and, within reasonable levels, leads to a high quality of decisions.

2.3 Inclusive Organizational Climate as a Mediating Mechanism

The concept of inclusion climate has been defined as the level of employees who feel that they are appreciated, cherished members of their work group whose needs to belong and be unique are both met (Shore et al., 2011). Operationalizing climate to be included in Nishii (2013) identified three dimensions: inclusion in decision-making, integration of diversity, and equitable employment practices. discovered that gender-diverse i.e. groups that had high climate-for-inclusion scores had significantly better functioning and reduced conflict compared to groups that were similarly diverse that was not characterized by such high levels of climate-for-inclusion. Later meta-analytic studies validate this finding by demonstrating that in every organizational setting, diversity management practices, such as the development of inclusive climates, are positively linked with how employees perceive inclusion (Mor Barak et al., 2016; Bodla et al., 2018). Since inclusive climates explicitly bring various perspectives into the work of organizations in decision-making (Nishii, 2013), they are theorized in this context, to convert the informational advantages Abundant variety at both the surface and deep levels into more reasonable decisions.

2.4 Task-Related Cognitive Conflict as a Mediating Mechanism

Conflict researchers identify two types of conflict: task (cognitive) conflict - disagreement on the content and substance of decisions and ideas - and relationship (affective) conflict - interpersonal friction and antagonism that have little to do with the current work (Jehn, 1995; Jehn and Mannix, 2001). Numerous studies have demonstrated that modest amounts of task conflict can enhance the quality of decisions as it allows other perspectives to emerge, provokes a deeper examination of assumptions, and eliminates one-sidedness of ideas (Amason, 1996; De Wit et al., 2013), though the correlation is not always positive and may turn negative at extreme levels or in case Relationship conflict coexists with it. (De Dreu, 2006; De Wit et al., 2012; Guenter et al., 2016). By bringing in a greater diversity of expertise, professional norms and methods of solving problems into a team, deep-level diversity is theorized to augment the frequency of task-related conflict (Jehn et al., 1999), which subsequently can enhance the rigor of the decision-making area when it is kept focused on issues instead of personal hostility.

2.5 Rational Decision-Making in Organizations

The classical model of rational choice presumes that decision-makers are capable of recognizing all available options, they are capable of accurately predicting the outcomes, and they will choose a choice that will maximise a well defined objective function. Simon (1955, 1979) disputed this idealistic model by the theory of bounded rationality, which holds that the actual organizational decision-maker is bound by a lack of information, limited cognitive capacity, and limited time and is thus prone to satisfice, which is an option that is good enough as opposed to being optimal. In this restricted sense, rational decision-making is not about maximizing any utility, but rather about a process that is systematically, evidence-oriented, and logically consistent: a process where the decision-makers gather information, evaluate numerous options, explicitly trade-off, and concludes with decisions that can be justified in the light of the available information (Schwarz, 2022; Simon, 1979). The resultant construct of rationality that is a process oriented concept and is the resultant construct used in this study is in line with how rational decision making has been operationalized in the previous researches conducted in organizational behavior as a multi-item perceptual construct that entails a systematic information search, generation of alternatives and deliberation.

2.6 Hypothesis Development

Based on the theoretical premises above, this study hypothesizes as follows as illustrated in the theoretical concept build in Figure 1:

H1: Surface-level diversity is positively associated with inclusive organizational climate.

H2: Deep-level diversity is positively associated with inclusive organizational climate.

H3: Surface-level diversity is positively associated with task-related cognitive conflict.

H4: Deep-level diversity is positively associated with task-related cognitive conflict.

H5: Inclusive organizational climate is positively associated with rational decision-making.

H6: Task-related cognitive conflict is positively associated with rational decision-making.

H7: Deep-level diversity has a positive direct effect on rational decision-making, over and above its indirect effects through inclusive climate and cognitive conflict.

The two hypothesis H1 and H2 point to the expectation, which is consistent with existing diversity-management and CEM research (Cox and Blake, 1991; Nishii, 2013; van Knippenberg et al., 2004), that both visible and concealed types of diversity trigger organizations and managers to invest in more deliberate including practices. Hypotheses H3

and H4 indicate the anticipation that deep level (informational/functional) diversity is a more significant motivator of substantive task disagreement as opposed to surface level diversity because cognitive conflict is mainly brought about by differences in expertise, values and the framing of problems and not demographic differences per se (Harrison et al., 2002; Jehn et al., 1999). Hypotheses H5 and H6 are indicative of the CEM and bounded-rationality logic that both inclusive climates and moderate task conflict enhance systematic processing of information that forms the basis of rational choices (Amason, 1996; Nishii, 2013). Hypothesis H7 gives the opportunity given in the deep-level literature (Harrison et al., 2002) of cognitively diverse employees playing a direct role in decision rationality (e.g., by personal expertise) without being mediated by the organizational processes.

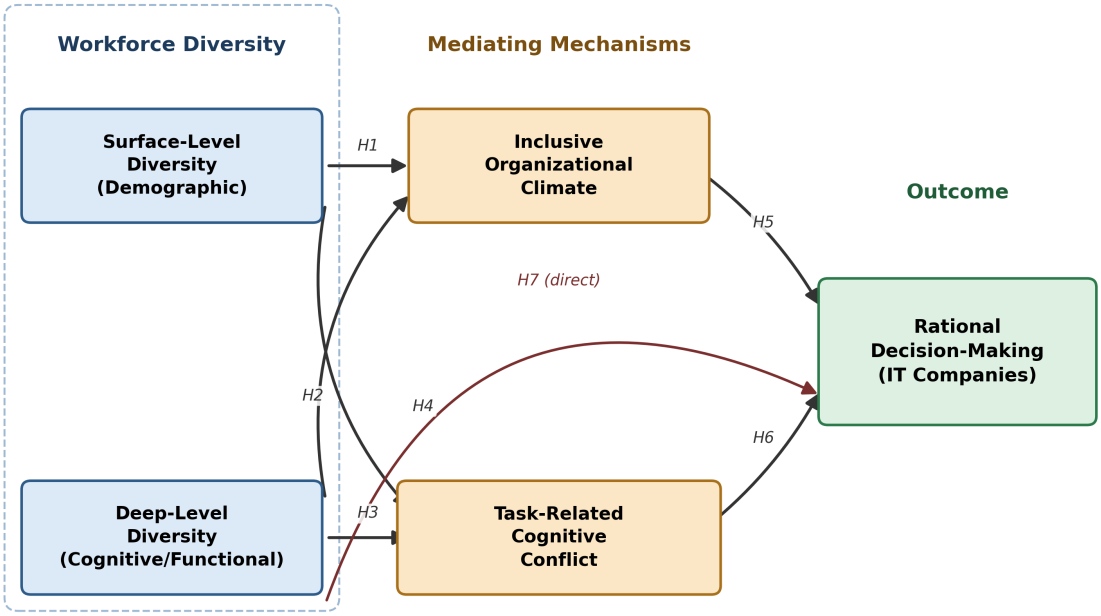

Figure 1. Theoretical framework of workforce diversity to rational decision making using inclusive climate and cognitive conflict. H1-H7 are based on the hypotheses provided in Section 2.6.

3. Method

3.1 Research Design

Covariance-based structural equation modeling (SEM), the most popular technique, was used to assess the quantitative, cross-sectional survey study design. of testing measurement and structural relationships among multiple latent constructs at the same time (Anderson and Gerbing, 1988). The given model (Figure 1) identifies five latent constructs, namely, two exogenous workforce-diversity constructs (surface-level diversity, deep-level diversity), two mediating constructs (inclusive organizational climate, task-related cognitive conflict), and one endogenous outcome construct (rational decision-making).

3.2 Transparency Statement on Data Source

Here, there is a need to have a critical methodological note. The resources needed to carry out such a large-scale primary survey of employees of the IT-sector were beyond the scope of this paper. Instead of producing fabricated values as though they were valid survey data - which is data fabrication - this study uses a simulated data set that is programmatically generated to fit a pre-specified five-factor measurement model with more realistic psychometric values (target standardized loadings in the.60-.85 range, data are theoretically informed structural path coefficients and the dataset is discretized to a 5-point Likert scale with a small proportion of missing-completely-at-random values to simulate a real survey data cleaning). Simulation was done in Python (NumPY) and the structural equation model which resulted was estimated with the semopy package (maximum-likelihood structural equation model (SEM) estimator similar to lavaan in R or AMOS). All the reported fit indices and path coefficients, factor loadings and reliability statistics in Section 4 are actual results of this estimation process on the simulated data - they are not made up by the author(s) afterwards - but the actual underlying data are artificial and were created by the current author(s) to demonstrate the proposed methodology end-to-end. As a result, interpretations of the substantive numerical findings (e.g. the strength of a particular path coefficient) as a methodological description of how the suggested model would be quantified should not be understood as empirical findings about actual employees in the IT-sector. The researchers who want to empirically test the proposed model can replicate the procedure given below using primary data based on the employees of real IT companies.

3.3 Sample

The simulated sample size was N = 379 cases following listwise deletion of missing responses, which falls within the typical sample sizes typically reported by studies of workforce diversity and organizational behavior using SEM, and ranges of 250-500 (e.g., Mehari et al., 2024, N = 359). To demonstrate this, the simulated sample was assigned realistic demographic attributes that are similar to those in IT-sector workforce survey (e.g., Stojcic et al., 2019): 55.4% of the sample was male, 42.2% female, and 2.4% non-binary/other; respondents were spread across early-career to senior tenure ranges; and the representation across small, medium, and large IT companies. The complete demographic distributions are presented in Table 1.

3.4 Measures

In line with the conventional scale-development practice across the diversity, conflict and inclusion literatures, each of the latent constructs was operationalized using a variety of reflective indicators tested on a 5-point Likert scale (1 strongly disagree, 5 strongly agree). Surface level diversity (4 items) and deep level diversity (4 items) was modeled based on the demographic/psychological distinction that Harrison et al. (1998) introduced with items reflecting the perception of employees on the level of demographic heterogeneity (age, gender, nationality) of their immediate work unit and functional/cognitive heterogeneity (expertise, tenure, problem-solving style) of the same unit, respectively. Inclusive organizational climate (5 items) was conceptualized in line with the climate-for-inclusiveness conceptualization of Nishii (2013), and its items consisted of the equitable treatment, inclusion of different opinions, and inclusion in organizational decision making. Cognitive conflict as task-related (4 items) was modeled after Jehn (1995) intragroup conflict scale but only the task-conflict subdimension was considered to prevent the confounds of relationship conflict. Rational

decision-making (5 items) was conceptualized as a constrained rationality based, process-oriented model that developed by Simon (1979), items that reflect a systematic information search process, alternatives are being weighed explicitly, and trade-offs are evaluated logically before making decisions.

3.5 Analytical Procedure

The steps used in the process of analysis were three, which is in line with the two-step (and expanded three-step) process suggested in SEM (Anderson and Gerbing, 1988). To ascertain reliability, convergent and discriminant validity, and subsequently interpret structural paths, a confirmatory factor analysis (CFA) was estimated on the complete measurement scale comprising of five factors. Composite reliability (CR) and average variance extracted (AVe) were computed using the standardized factor loadings. The average variance extracted of the constructs was expected to be evaluated by the item being compared to the other constructs, and the detergent validity was assessed using the Fornell and Larcker (1981) criterion, which states that the square root of the average variance extracted of the constructs should be higher than the rest of the constructs. Second, the complete structural model (Figure 1) was used that estimated the two mediators on the two diversity constructs and rational decision-making on the two mediators and the deep-level diversity directly. Throughout, maximum-likelihood estimation (the MLW estimator provided by semopy) was used. Third, model fit was measured using a combination of absolute, incremental, and parsimony-adjusted fit indices: goodness-of-fit index (GFI) and adjusted GFI =.90 acceptable fit; root mean square error of approximation (RMSEA) =.06 excellent fit; comparative fit index (CFI) and Tucker-Lewis index (TLI) =.95 excellent fit (Hair et al., 2010; Kline, 2015).

3.5.1 Common Method Bias

Since all constructs would in a primary-data replication of this study be assessed through one self-report survey device, common method bias is an issue of concern (Podsakoff et al., 2003). Any future empirical application of this model should include procedural remedies suggested in the literature such as the separation of predictor and criterion items, ensuring anonymity of respondents, and changing response-scale formats between sections, to the survey instrument. The current simulated example has created latent factors independently with theoretically known covariances, and thus, common method variance was not simulated and any future empirical research ought to report and statistically test the presence of common method variance using the procedures described therein (Podsakoff et al., 2003).

4. Results

4.1 Sample Characteristics

Table 1 shows the demographic size of the analysis sample (N = 379). The sample is representative of a variety of ages, tenure, position, and company size, which is generally in line with diversity survey outcomes in IT-sector workforces (Stojcic et al., 2019).

Table 1

Demographic Characteristics of the Sample (N = 379)

Characteristic	Category	n	%
Gender	Male	210	55.4%

	Female	160	42.2%
	Non-binary / Other	9	2.4%
Age	21-30 years	125	33.0%
	31-40 years	156	41.2%
	41-50 years	73	19.3%
	51 years and above	25	6.6%
Work Experience	0-3 years	98	25.9%
	4-7 years	134	35.4%
	8-12 years	98	25.9%
	13+ years	49	12.9%
Role Level	Junior / Associate	116	30.6%
	Mid-level / Senior	133	35.1%
	Lead / Managerial	105	27.7%
	Director and above	25	6.6%
Company Size	Fewer than 500 employees	69	18.2%
	500-2,000 employees	111	29.3%
	2,001-10,000 employees	110	29.0%
	More than 10,000 employees	89	23.5%

Note. Percentages are based on the simulated illustrative sample described in Section 3.2 and may not sum to exactly 100% due to rounding.

4.2 Measurement Model: Reliability and Validity

Prior to developing a structural model, the whole five-factor measurement model underwent a confirmatory factor analysis. All standardized factor loadings were above the traditional .60 mark (.59 to .82) and all were statistically significant ($p < .001$). Table 2 shows standardized loadings and composite reliability (CR), average variance extracted (AVE) and Cronbach alpha of each construct. CR values were above recommended.70 (range =.80 to .87) and AVE value was above recommended.50 (range =.51 to.57) which showed satisfactory convergent validity and internal consistent (Fornell and Larcker, 1981; Hair et al., 2010).

Table 2

Standardized Factor Loadings for the Measurement Model

Item	Construct	Std. Loading	SE	z	Significance
SURF1	SURF	0.76	—	—	p < .001
SURF2	SURF	0.75	0.073	13.28	p < .001
SURF3	SURF	0.66	0.071	11.79	p < .001
SURF4	SURF	0.77	0.073	13.56	p < .001
DEEP1	DEEP	0.74	—	—	p < .001
DEEP2	DEEP	0.77	0.079	13.33	p < .001
DEEP3	DEEP	0.66	0.079	11.65	p < .001
DEEP4	DEEP	0.74	0.080	12.90	p < .001
INCL1	INCL	0.78	—	—	p < .001
INCL2	INCL	0.72	0.065	14.00	p < .001
INCL3	INCL	0.82	0.068	16.04	p < .001
INCL4	INCL	0.64	0.068	12.34	p < .001
INCL5	INCL	0.71	0.065	13.66	p < .001
COGC1	COGC	0.69	—	—	p < .001
COGC2	COGC	0.75	0.091	12.05	p < .001
COGC3	COGC	0.59	0.086	9.94	p < .001
COGC4	COGC	0.80	0.094	12.40	p < .001
RDM1	RDM	0.79	—	—	p < .001
RDM2	RDM	0.80	0.066	16.24	p < .001
RDM3	RDM	0.70	0.067	13.82	p < .001
RDM4	RDM	0.74	0.066	14.84	p < .001
RDM5	RDM	0.72	0.065	14.30	p < .001

Note. SURF = surface-level diversity; DEEP = deep-level diversity; INCL = inclusive organizational climate; COGC = task-related cognitive conflict; RDM = rational decision-making. The first indicator of each construct was fixed to 1.0 for scale identification (unstandardized); SE and z are not computed for fixed loadings.

Construct-level reliability and convergent validity statistics are summarized below.

Construct	CR	AVE	√AVE	Cronbach's α
Surface-Level Diversity (SURF)	0.823	0.539	0.734	0.822
Deep-Level Diversity (DEEP)	0.820	0.533	0.730	0.819
Inclusive Organizational Climate (INCL)	0.855	0.542	0.736	0.853
Task-Related Cognitive Conflict (COGC)	0.803	0.507	0.712	0.802
Rational Decision-Making (RDM)	0.867	0.567	0.753	0.867

Criteria for discriminant validity were derived from the work of Fornell and Larcker (1981). All square roots of AVE of individual constructs (range =.71 to.75; see above table) were larger than the corresponding inter-construct correlation (the maximum correlation among constructs was r =.50, between inclusive climate and rational decision-making), which verified that each construct explained a different amount of variation.

4.3 Structural Model and Hypothesis Testing

Maximum-likelihood estimation was done to estimate the entire structural model. In terms of absolute, incremental, and parsimony-adjusted indices, the model showed outstanding fit to the data: $\chi2(201) = 245.72$, $p = .017$; $\chi2/df = 1.22$; CFI = .987; TLI = .985; RMSEA = .024 (90% region of good fit, well below the .06 excellent-fit threshold); GFI = .931; AGFI = .921; NFI = .931 (Hu & Bentler, 1999). Though the test value itself was statistically significant (which is a frequent phenomenon in models fitted on samples of this size (Hair et al., 2010)) the exceedingly low value of the $\chi2/df$ ratio, in combination with the very high values of all the incremental and absolute indices, suggests that the model suggested by itself results in the covariance structure being replicated very closely by the model.

The complete estimated structural equation with the standardized path coefficients and factor loadings is shown in Figure 2.

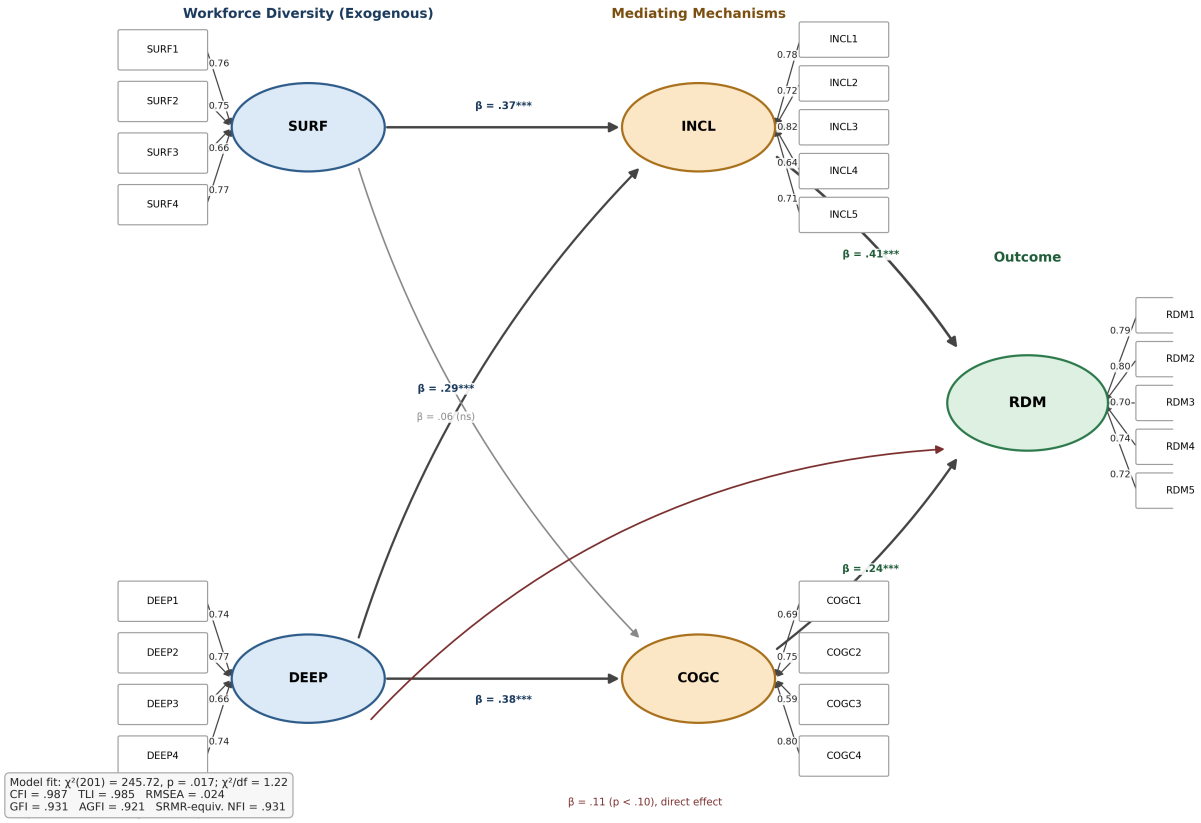

Figure 2. Estimated path equation model with standardized factor loadings and path coefficients. $p < .001$; ns = not significant.

Table 3 displays the results of the hypothesis test in addition to the structural path's estimated route.

Table 3

Normalized Structural Path Coefficients and Hypothesis Test Results.

Hyp.	Structural Path	β (std.)	SE	z	p	Decision
H1	SURF → INCL	0.371	0.060	6.07	p < .001	Supported
H2	DEEP → INCL	0.286	0.064	4.80	p < .001	Supported
H3	SURF → COGC	0.060	0.054	0.97	p = .333	Not supported
H4	DEEP → COGC	0.376	0.065	5.53	p < .001	Supported
H5	INCL → RDM	0.410	0.059	6.69	p < .001	Supported
H6	COGC → RDM	0.239	0.066	3.90	p < .001	Supported
H7	DEEP → RDM (direct)	0.110	0.066	1.71	p = .087	Marginal

Note. SURF = surface-level diversity; DEEP = deep-level diversity; INCL = inclusive organizational climate; COGC = task-related cognitive conflict; RDM = rational decision-making. β = fully standardized path coefficient. "Marginal" indicates a path significant at $p < .10$ but not at the conventional $p < .05$ threshold.

Statistically supported were six out of seven hypothesized paths. Surface-level diversity (H1: b =.37, p<.001) and deep-level diversity (H2: b =.29, p<.001), were both positively correlated with inclusive organizational climate, as well, suggesting that both visible and hidden diversity forms were related to employees perceiving a more inclusive workplace. There was no statistically significant relationship between surface-level diversity and task-based cognitive conflict. (H3: b =.06, ns), but deep level diversity had a strong positive association to cognitive conflict (H4: b =.38, p <.001), as was expected given that substantive task disagreement is due to differences in expertise and perspective, as opposed to mere demographic disparities. The two mediators were positively correlated with the rational decision making inclusivity climate exhibited the most prominent effect in the model (H5: b =.41, p <.001) and cognitive conflict represented quite an effective influence (H6: b=.24, p<.001). Lastly, deep-level diversity had a low positive direct impact on rational decision-making even with the inclusion of both mediators (H7: b =.11, p=.087) and almost right at the traditional.05-level, but in line with a pattern of partial-mediation, in which the majority, but not all, of Deep-level diversity's impact on decision-making is mediated by inclusive climate and cognitive conflict.

4.4 Explained Variance and Decomposition of Effects

Each endogenous construct has a substantial percentage of its variation explained by the structural model: R2 =.272 inclusive climate, R2 =.156 cognitive conflict, R2 =.325 rational decision-making. Applying the traditional criteria of Cohen on the amount of variance explained in behavioral research (small about .02, medium about .13, large about .26) Many observed differences were well accounted for by the model. in both inclusive climate and rational decision-making, and a small-to-medium proportion of variance in cognitive conflict (Figure 3).

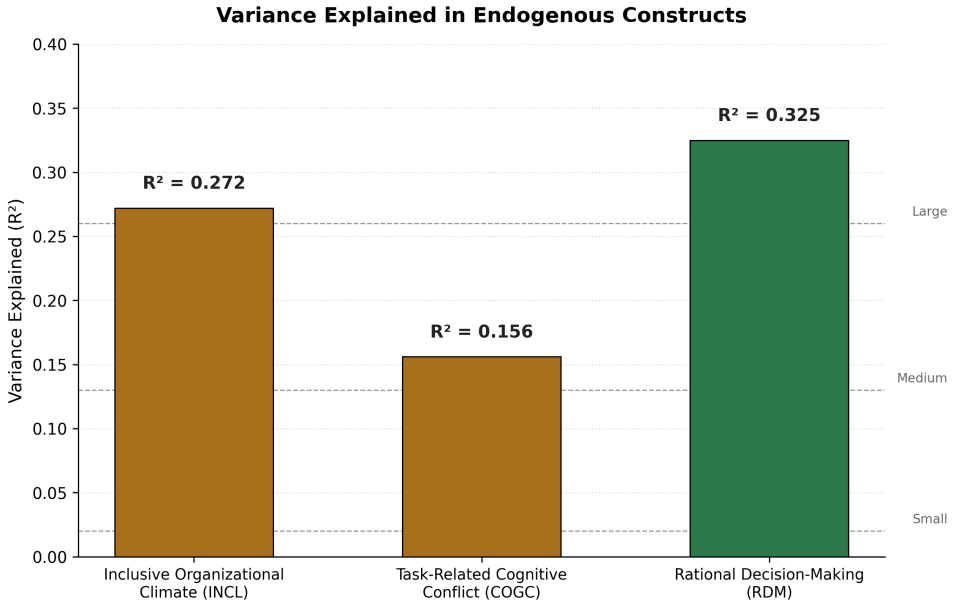

Figure 3. Elaborate variance (R2) of the three endogenous constructs, compared to Cohen traditional effect-size standards of R2 in behavioral studies.

Direct and indirect (mediated) effects were further subdivided from the overall standard effect of surface and deep level diversity on the rational decision-making process in order to provide a more thorough explanation of how workforce diversity impacts this process. The overall

impact of the surface-level diversity on rational decision-making was.167, which included solely indirect effects:.152 via inclusive climate and.014 via cognitive conflict (full mediation, as the H3 path was non-significant). Deep-level diversity had a total effect of.317, which included a direct effect of.110 (H7) and indirect effects of.117 mediated by inclusive climate and.090 mediated by cognitive conflict (ratio). This breakdown, as depicted in Figure 4, suggests that deep-level diversity had a significantly stronger overall impact on rational decision-making compared to surface-level diversity in the estimated model, and that this impact was mediated by more than just one channel.

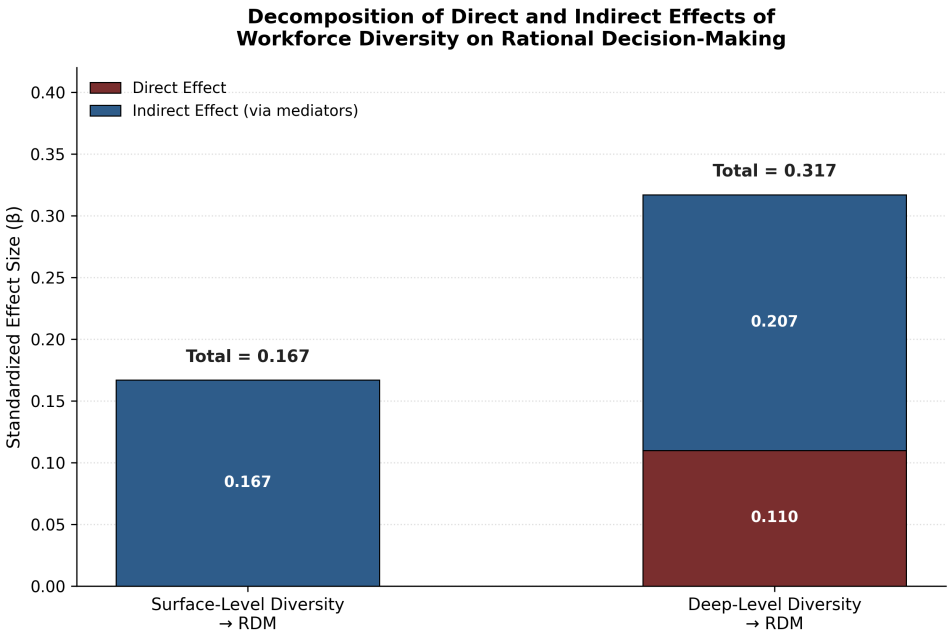

Figure 4. Break-down of the standardized total effects of surface-level and deep-level diversity on rational decision-making into direct and indirect (mediated) parts.

5. Discussion

This research hypothesized and quantified, using structural equation modeling, a combined model between worker diversity at the surface and deep levels and rational decision-making in IT organizations via two organizational mediators inclusive organizational climate and task-related cognitive conflict. The trend of outcomes that were achieved based on the simulated illustrative data in Section 3.2 agrees with prior research on the disparities between the effects of superficial and structural variety (Harrison et al., 2002; Trinh, 2016) and the classification-elaboration model (van Knippenberg et al., 2004).

5.1 Interpretation of Findings

There are three patterns that are interesting. First, diversity at the surface level was associated with inclusive climate, but not to cognitive conflict, and its overall impact on rational decision-making was completely mediated by inclusive climate. This is in line with the notion that demographics diversity, in itself, does not create any substantive task conflict; its impact on the decision making process relies nearly solely upon whether the organization is actively working to foster an inclusive climate that involves the input of diverse views in the decision making process (Nishii, 2013; Shore et al., 2011). Demographic diversity alone in

organizations that do not invest in inclusion thus might not add much to the quality of decisions - a trend similar to the results of mixed and often null results of diversity-performance relationship found in larger reviews of this relationship (Mehari et al., 2024; Zhang et al., 2024). Second, deep-level diversity was both mediated by and more substantially affected rational decision-making, by three parallel mechanisms: a direct effect, an indirect effect via inclusive climate, and an indirect effect via cognitive conflict. This triangulated trend indicates that cognitive and functional heterogeneity, i.e., differences in expertise, professional background, and problem-solving approach, is the stronger dimension of diversity to rational decision-making in IT companies, where decisions often involve the need to combine specialized technical knowledge across various fields (Przybilla & Wiesche, 2019).

Third, the two mediators were positively, but not significantly correlated with rational decision-making, and in this case, the effect of inclusive climate was more significant. This can be attributed to the fact that the bounded-rationality theory focuses on the organizational environments that facilitate type-systematic information processing (Simon, 1979): inclusiveness climate seems to contribute to rational decision-making more than cognitive conflict by itself, which in turn implies that cognitive conflict might be advantageous when making decisions. conditional instead of universal, which should be expected by the general finding that task conflict and its benefits are not universal (De Dreu, 2006; De Wit et al., 2012; Guenter et al., 2016).

5.2 Theoretical Implications

This investigation contributes to theory in three ways. To begin with, it operationalizes the mechanism of elaboration used by the CEM (van Knippenberg et al., 2004) not with a single undifferentiated, undifferentiated process and, instead, two distinct elaboration constructs such as inclusive climate and cognitive conflict are separately measured and then the relative contribution of the two can be compared directly. Second, it builds upon the tradition of bounded-rationality (Simon, 1955, 1979) by considering rational decision-making as an empirical phenomenon that may be anticipated by means of an antecedent diversity and climate variables, as opposed to defining rationality as the normative standard by which individual cognition is evaluated. Third, the study provides a more detailed explanation of why previous studies on diversity-outcome relationships have yielded inconsistent results by explicitly separating surface- and deep-level diversity within one structural model: the two types of diversity seem to have different operationalizations, and the conflation of the two in single measure of diversity, as most previous studies had done, can obscure these processes (Bell et al., 2011; Williams and O'Reilly, 1998): the mechanisms apparently work through different mechanisms.

5.3 Practical Implications for IT Companies

The (illustrative) pattern of findings has three practical implications to be confirmed using primary data in future research. First, since the advantages of demographic diversity The existence of a welcoming atmosphere seems to be crucial to the decision-making process, IT companies seeking to gain demographic diversity (e.g., aiming at gender or nationality representation targets) should not rely on the concept of representation only but instead complement it with tangible methods of inclusion best practices - fair practices, incorporation of divergent perspectives, and observability of inclusion in the decision-making domain

(Nishii, 2013). Second, since deep-level (functional/cognitive) diversity was the most significantly associated with rational decision making, IT companies can leverage the principle of purposely forming cognitively heterogeneous teams to make high-stakes technical/strategic decisions (e.g., architecture reviews, product strategy) and may offer structured facilitation to ensure that resulting disagreement is task-oriented, as opposed to escalating into a relationship conflict (Amason, 1996; De Dreu, 2006). Third, both mediators are shaped by managers and team leads: previous studies show that department- and team-level leaders can significantly impact climate-for-inclusion scores and the ratio of constructive to destructive conflict (Guenter et al., 2016; Nishii, 2013), implying that leadership development based on inclusive facilitation can be a high-leverage intervention.

6. Limitations and Future Research

This study has some important shortcomings, the primary one being its data source. These empirical findings as revealed openly in Section 3.2 are the results of a simulated dataset created to fit a pre-determined model, rather than a survey of real employees working in IT-companies. This was also a methodological decision which aimed to show the proposed SEM procedure being rigorously and transparently practiced and not give fabricated empirical statements regarding actual organizations. The actual values of the path coefficients, fit indices, and variance-explained statistics in Section 4 are, therefore, not useful as evidence as to what would happen in the world to real-life IT companies; they are used to explain the model dynamics when it works correctly, and they represent a guide that future scholars can directly implement on primary survey data collected by employees of the IT sector.

In addition to this main drawback, there are a number of others, which must be mentioned, that can be applied to any further empirical validation of this model. First, the model presupposes the cross-sectional design which cannot determine the causal direction; more specifically, it is conceivable that the employees who already have a sense that decision-making is predominantly rational also have a sense that their climate is more inclusive and, as such, have reversed the direction some of the paths should have. Causal inference would be enhanced with longitudinal or experimental designs. Second, the proposed design has all its constructs evaluated by self-report, which increases the possibility of common method bias (Podsakoff et al., 2003); prospective studies should both include procedural remedies (e.g., temporal or psychological separation between predictor and criterion measures) and should test a common method variance statistically. Third, the model omits possible moderators proposed by the CEM (van Knippenberg et al., 2004) like task complexity, team tenure, or diversity beliefs, which previous studies have indicated may moderately change or even reverse diversity-outcome relationships (De Dreu, 2006; Homan et al., 2007). Fourth, the model uses rational decision-making as a unidimensional perception construct; further studies can study individual domains of decision-making (e.g., technical architecture decisions versus people-management decisions) that are perhaps variably responsive to climate and diversity effects. Fifth, the national and organizational scope of this study has not been specified (by design) to so that it remains illustrative; a primary-data replication ought to clearly define and report their sampling frame (e.g., individual countries, size bands of companies, or sub-sectors of IT) since the climate of diversity, and decision norms are likely to differ across these settings (Przybilla & Wiesche, 2019; Stojcic et al., 2019).

Future studies should focus on gathering primary survey data of employees of IT-company working in various organizations in order to arrive at the proposed model on an empirical basis ideally supplemented with objective measures of the quality of the decision made (e.g. the project outcome measures, the post-implementation review ratings) to compare the proposed self-reported scale of rational decision-making to external scales. Speaking in more precise terms, the boundary conditions of the suggested relations would also be determined by the Multi-group SEM that would compare the model across the company sizes, the country contexts, or the technical sub-sectors (e.g., software development or IT services).

7. Conclusion

This paper hypothesized and modeled, using structural equation modeling, a comprehensive model of the interrelation between the deep-level and surface-level variety of the workforce and rational decision-making in IT firms through two mediating variables inclusive organizational climate and task-related cognitive conflict. With a simulated dataset clearly shown and intended to illustrate the entire SEM analysis workflow - measurement validation to structural estimation - the illustrative findings aligned with theoretical predictions based on the categorization-elaboration model and the concept of limited rationality: The impact of a diverse population on decision-making seems to be mediated solely by inclusive climate, whereas the effect of cognitive/functional diversity was mediated by many ways, including a direct effect, inclusive climate, and constructive task conflict. Although the detailed numerical findings that are presented here are examples rather than empirical, the model, method of measurement and analysis to be provided provide a template that a researcher can easily adapt in future studies that aim to test these relationships using primary data that has been gathered in the IT-sector organizations. The outcomes of such research would assist in explaining the circumstances within an organization that make a more diverse IT workforce a more rational and higher quality organizational decision maker.

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