

How does diversity affect public organizational performance? A meta-analysis

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Abstract

Research in public administration examining the effects of diversity on public organizational performance has produced mixed results. However, the lack of a comprehensive theoretical framework has failed to provide an explanation for the mixed diversity effects. This study introduces a systematic analytical model, Categorization-Elaboration Model (CEM), to help identify the contextual constructs which can promote the positive effects of diversity on public organizational performance. A meta-analysis is conducted on 37 quantitative studies to test the empirical validity of a CEM constructed theoretical model with 253 effect sizes which will promote a better understanding of the circumstances or contexts that lead to the benefits of diversity within public sector organizations. The empirical results of meta-regression point to the appropriate range of contextual factors which can alleviate the potential negative effects of diversity and promote its overall positive effects.

Abstract

公共行政有关工作人员身份多元化如何影响公共组织绩效的研究结果并不一致。而当前研究缺乏一个全面的理论框架来分析多元化在不同情境下的不同影响。本文试图引入一个系统性的分析框架，即归类-细化模型(Categorization-Elaboration Model)，来识别有助于充分发挥多元化对公共组织绩效积极作用的情境性因素。为了验证该分析模型的有效性，本文对来自 37 篇定量研究的 253 个效果量进行元分析，从而更好地

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了解工作人员身份多元化在哪些条件下积极影响公共组织绩效。元分析结果提供了一系列情境性因素，有助于减少多元化对公共部门组织绩效的负面影响并充分发挥其积极作用。

1 | INTRODUCTION

Despite the increase in relevant studies, the impact of diversity on public organizational performance has produced mixed results. In many cases, diversity in the composition of public employees has contributed positively to the operations of public organizations, as suggested in studies of representative bureaucracy (e.g., Andrews et al., 2005; Meier & Nicholson-Crotty, 2006; Nicholson-Crotty et al., 2017; Riccucci, 2021; Wise & Tschirhart, 2000), organizational networking capability (e.g., Compton & Meier, 2016; Jackson & Joshi, 2004; Owens & Kukla-Acevedo, 2012), organizational accountability (e.g., Gazley et al., 2010; Tomlinson & Schwabenland, 2010), innovations (e.g., Choi et al., 2018; Muchiri & Ayoko, 2013), and organizational inclusion (Andrews et al., 2014; Sabharwal, 2014). However, under different circumstances, some studies have found that diversity in public workforces may compromise public organizational outcomes, as evidenced by failed agreements on decision-making (e.g., Jehn et al., 1999), communication costs (e.g., Owens & Kukla-Acevedo, 2012), and low organizational commitments from marginalized identity subgroups (Moon, 2018; Ritz & Alfes, 2018). The highly context-specific diversity effects on public organizational outcomes implies that it is necessary to conduct a systematic analysis on the contextual constructs shaping the configurations of diversity effects on performance.

A comprehensive, unified theoretical framework would assist in this analysis by helping to identify potential contextual concepts which might lead to diversity's positive effects on organizational performance. Earlier studies have attempted to synthesize different theories, but CEM seeks to incorporate the premises or underpinnings of existing relevant theories. In effect, every potential moderator in the studies included here may not be fully captured.

With one exception, public administration research on diversity has not been theory driven. Some research conducted in the private sector, on the other hand, has applied social categorization theory or social identity theory (see e.g., Tajfel, 1979, 1982; Tajfel et al., 1971; Tajfel & Turner, 1986), and others have applied optimal distinctiveness theory. The former refers to how individuals separate themselves into groups based on race, ethnicity, gender and other characteristics and the latter which is an extension of social identity theory (Brewer, 2012), refers to individuals' needs to be both similar and different from others. Sabharwal (2014) is the one study which applies social identity theory and social comparison theory (i.e., where individuals compare their own skills and abilities to those of others), to public agencies to determine the impact of diversity on performance.¹ But as she prudently points out, "no unified theory of inclusion exists," and therefore, scholars have instead pulled together other theories such as social categorization to investigate the effects of diversity on workplace performance (Sabharwal, 2014, p. 198).

Moreover, extant studies found several positive effects from diversity when it was well managed, including, for example, inclusivity, or valuing, incorporating and protecting the voices and perspectives of diverse identity subgroups; mentoring; diversity in leadership teams; establishing clear goals and monitoring progress around diversity goals; prioritizing those goals, and holding leaders and managers responsible and accountable for goal attainment (e.g., Ashikali & Groeneveld, 2015; Choi & Rainey, 2010; Guy et al., 2010; Park & Liang, 2020; Rutherford, 2016; Sabharwal, 2014). For a comprehensive understanding of diversity-performance relationships in public organizational settings and to attain effective diversity management policies and strategies, it is imperative for public administration to apply a unified, comprehensive theory that addresses the varying effects of diversity on public organizational outcomes.

In this study, the Categorization-Elaboration Model (CEM) will be introduced, a model which is frequently used to examine diversity-performance relationships in the nonpublic sphere (e.g., Guillaume et al., 2017; Nederveen Pieterse et al., 2013; van Knippenberg et al., 2004). Its application may more fully explain diversity-performance

relationships that account for contextuality in the public sector. To a certain extent, this research seeks to discover the potential applicability of CEM to public sector workforces. It seeks to complement the application of alternative theories to existing research in the private sector.

The purpose of this research is to explain the varying effects of diversity on public organization performance under the framework of CEM to better understand the circumstances or contexts that lead to the public organizational benefits of diversity. Specifically, the research conducts a meta-analysis on 37 quantitative studies to test the empirical validity of a CEM constructed theoretical model with 253 effect sizes. The current research contributes to both the practice and the development of theory for studying diversity management in public administration in at least three ways. First, the meta-analysis summarizes the empirical findings of the current literature on diversity-performance relationships in public organizational settings, which provides directions for future research. More importantly, by applying CEM to public organizational settings, this study provides a theoretical model that systematically describes the multidimensionality of diversity effects on public organizational performance. Additionally, the empirical results of meta-regression are suggestive of the appropriate range of contextual factors which can alleviate the potential negative effects of diversity and promote its overall positive effects. However, it should be noted at the outset that there is a paucity of diversity management studies from countries outside the United States. It must be recognized that organizational behavior is contextual and national culture prescribes many of the biases that are manifested in the workplace. The workplace in China, for example, is different from America's and a Philippine work setting would be very different from South Africa's.

2 | HOW DIVERSITY CAN IMPACT PUBLIC ORGANIZATIONAL PERFORMANCE

As noted, a good deal of research indicates that diversity in organizational composition, when effectively managed, is likely to positively contribute to public organizational performance, in terms of, for example, responsiveness to the citizenry, governance capacity, and accountability. These studies generally rely on demographic variables to measure diversity (see, e.g., Choi & Rainey, 2010; Gazley et al., 2010; Muchiri & Ayoko, 2013; Opstrup & Villadsen, 2015; Owens & Kukla-Acevedo, 2012; Pitts, 2009; Pitts & Jarry, 2007, 2009; Sabharwal et al., 2018; Shibeshi, 2012; Soni, 2000; Watson et al., 1993). More recently, the research on diversity has focused on diversity, equity and inclusion (DEI), which points to the importance of managing diversity to ensure inclusiveness of diverse voices and to promote equity in the workplace (see, e.g., Guy & McCandless, 2012, 2020; McCandless et al., 2022; Naff & Kellough, 2003). In this sense, it calls for “public organizations to be leaders in creating inclusive organizations where cultures of all groups not only coexist but thrive” (Nelson & Piatak, 2021, p. 295).

However, some research has pointed to the potential negative effects of diversity, particularly if it is not effectively managed. Studies in the private sector, for example, have shown that diversified workforces could generate conflicts stemming from differences in social identification and values, which may hinder the organizations' decision-making processes (see, e.g., Jehn et al., 1999). Similarly in the setting of public organizations, Owens and Kukla-Acevedo (2012) found that public managers in racially heterogeneous school districts spend more time mediating the network of diverse clienteles than those in racially homogeneous school districts, which resulted in relatively lower performance for the heterogeneous school districts compared to those that were homogeneous.

Other studies have suggested that diversity might be detrimental to the basic functioning of public organizations in their efforts to promote agreements on organizational values and to address uncertainty (see, e.g., Miller & del Carmen Triana, 2009). Conflicting voices of diverse identity subgroups within work settings, if not well-managed, could complicate the ability of managers to synthesize and include the array of voices (Sabharwal, 2014).

In short, the benefits of diversity to public organizational performance have been well-illustrated in the literature of public administration, as well as its potential costs and challenges. However, the mixed findings in the empirical research might be of limited value because most studies focus on the effects of diversity from the standpoint of only

demographic categories, which ignores specific demographic and managerial constructs that contextualize and moderate the performance effects of diversity. Thus, in order to better understand the impact of diversity on public organizational performance, it is important to explore the contextual determinants which promote, or conversely mitigate diversity benefits to public organizational performance (McCrea & Zhu, 2019).

3 | THE MULTIDIMENSIONALITY OF DIVERSITY EFFECTS: CEM

With respect to existing research, demographics in terms of personnel was the construct used most frequently to identify different dimensions of diversity effects, but even here, no empirical tests of these analytical frameworks were conducted (see, e.g., Ali & Ayoko, 2014; Cox, 1993; Larkey, 1996; Mazneski, 1994; Pelled, 1996; Ritz & Alfes, 2018). In these studies, diversity was empirically defined as demographic differences between or among group members characterized by race, ethnicity, gender, language, and nationality, which indicates a demographic perspective of diversity constructs (Colquitt et al., 2002; Cummings et al., 1993; Earley & Mosakowski, 2000; Milliken & Martins, 1996). In addition to a demographics, organizational characteristics such as goals, leadership, recruitment, inclusivity and incentive mechanisms are also considered as contributing factors to increasing organizational diversity, which shape diversity effects under specific managerial designs (Groeneveld & Verbeek, 2012; Guy et al., 2010; Sabharwal, 2014; Cunningham, 2009; Von Bergen et al., 2002). Yet, existing research tends to identify the effects of diversity as it varies across different demographic categories and organizational contexts, with few accounts for why diversity functions differently in organizational settings (Jehn et al., 1999; Joshi & Roh, 2009; McCandless et al., 2022; Thomas & Ely, 1996).

The CEM, as first proposed by Van Knippenberg et al. (2004), seeks to provide an explanation for the link between diversity and group or organizational performance by determining the moderating effects of diversity. As van Knippenberg, De Dreu and Homan (2004, p. 1008) point out, “research on the positive and negative effects of work-group diversity has largely developed in separate research traditions, and an integrative theoretical framework from which to understand the effects of diversity on group performance is missing” (also see, Williams & O'Reilly III, 1998).

The CEM model has two major components: “social categorization” and “information elaboration.” The former refers the difference in people's propensities to prefer to work with and categorize themselves as part of one's own in-group (“us”) versus the out-group (“them”) along demographic lines such as race, ethnicity or gender (see, e.g., Guy et al., 2010; Haslam et al., 2010; Jackson et al., 1995; Sabharwal, 2014). The effects of diversity from this perspective tend to be negative due to intergroup biases that develop along racial, ethnic or gender lines. Moreover, as Van Knippenberg et al. (2004, p. 1014) point out, workers develop a sort of identity salience whereby they perceive their own group as more prominent and significant as compared to others.

CEM's other component, information elaboration, refers to the exchange, discussion, and integration of task-relevant information and perspectives through verbal communication (van Knippenberg et al., 2004).ⁱⁱ The benefits of social or cultural diversity arise from the extent to which diversity generates information elaboration. That is, it allows diverse teams to enhance their performance by transforming their knowledge into actionable solutions to complex problems (see, e.g., Resick et al., 2014). This feature of CEM is thus viewed as technical or instrumental as it focuses on tasks (van Knippenberg et al., 2011). In short, CEM suggests that diversity in groups or organizations will potentially increase the exchange, communication and elaboration of task-relevant information, which ultimately leads to higher creativity and productivity. Although intergroup biases can limit the efficacy of these elaboration processes, the expectation under CEM is that managerial efforts will ease intergroup biases, thus leading to increased organizational performance (see, e.g., Cox & Blake, 1991; Gazley et al., 2010; Thomas & Ely, 1996).

As a model or theory to identify different constructs of diversity effects, CEM speculates the directions of diversity effects from the different perspectives, that is, the negative effects of diversity caused by social categorization from a social system, and the positive effects of diversity through information elaboration from a technical system.

Moreover, CEM has been well supported by empirical evidence (see, e.g., Guillaume et al., 2017; Nederveen Pieterse et al., 2013; van Knippenberg et al., 2004).

4 | CONTEXTUAL DETERMINANTS AND HYPOTHESES

Contextual determinants of the relationship between diversity and public organizational performance emanate from social categorization and information elaboration, as discussed earlier. These factors inform our hypotheses.

4.1 | Contingencies of social categorization

CEM makes it possible to separate the factors that positively affect the interaction between diversity and public organizational performance from those which have negative moderating effects. The potential negative impact arising from social categorization can be attributed to identity salience, whereby some subgroups are dominant and others become subordinate, marginalized or disadvantaged. Such a discriminating effect can manifest as a result of two mechanisms: dominance in physical presence and stereotype consensus.ⁱⁱⁱ

Dominance in physical presence of identity subgroups (i.e., large or majority numbers) within the workforce allows certain groups to firmly hold their major stake within organizations. In the context of the United States, for instance, the dominant subgroup (i.e., White) is able to firmly hold their power and influence within organizations and marginalize other subgroups (e.g., Blacks, Latinx and Indigenous Americans; see, Randel, 2002). In effect, the voices and interests of these marginalized subgroups are silenced and excluded, thereby limiting the potential of the entire body of public workers to solve complex issues and positively impact organizational performance (e.g., King et al., 2011; Park, 2020; Sabharwal, 2014). Thus, the following hypotheses are offered:

H1. *The social categorization process as defined by demographic characteristics negatively moderates the interaction between diversity and public organizational performance.*

H1A. *The existence of identity subgroups within the dominant population (Whites) negatively moderates the effects of diversity on public organizational performance.*

In addition, identity salience might also lead to a “stereotype consensus” toward certain subgroups, which further causes the interests of socially marginalized or disadvantaged subgroups to be ignored. As indicated in the psychology literature, identity salience offers a cognitive basis for shared perceptions, judgments and collective actions, which further marginalizes and excludes identity subgroups deemed insignificant by the major groups (Haslam et al., 1999; Simon & Hamilton, 1994). White women and workers of color often receive substandard treatment compared to White men, due to stereotype consensus (Chattopadhyay et al., 2004). Such unequal treatment leads to poor organizational morale and low self-esteem for White women and workers of color (Chattopadhyay, 2003). In addition, intergroup communication is adversely affected by negative stereotype consensus; in effect, the voices of White women and workers of color will always be marginalized and excluded (Pettigrew, 1998; Sabharwal, 2014). Based on the research, the following hypothesis is offered:

H1B. *Stereotype consensus toward certain subgroups within diverse workforces negatively moderates the effects of diversity on public organizational performance.*

4.2 | Contingencies of information elaboration

Through the mechanism of information elaboration, the diversity effect refers to the extent to which group or organization members respond to each other's contributions and elaborate on them. CEM suggests that diversity in groups or organizations will increase elaboration of task-relevant information, which ultimately leads to higher creativity. Although intergroup biases can limit the efficacy of these elaboration processes, the expectation under CEM is that managerial efforts will be able to ease intergroup biases and foster the mechanism of information elaboration, thus leading to increased organizational performance (see, e.g., Gazley et al., 2010). In this sense, managerial strategies that increase access to organizational resources and promote organizational learning and integration can bring social equity and fairness to the organizational setting, which enables demographic diversity to be a strategic advantage for the organization (Cox & Blake, 1991; Thomas & Ely, 1996).

Thus, specific diversity management strategies identified in the literature of diversity and its management are likely to positively moderate the relationship between diversity and public organizational performance. First, a diversity-friendly leadership style can mitigate the conflicts between individual social identity subgroups through effective communication, coordination and guidance to ultimately facilitate the information elaboration processes (Andersen & Moynihan, 2016; Greer et al., 2012; Nishii & Mayer, 2009).^{iv} In addition, diversity-friendly leadership styles such as inclusive and transformational were found to not only promote organizational goal alignments for better cooperation and value integration in diverse workforces, but to also foster inclusive work environments (Ashikali et al., 2021; Guillaume et al., 2017; Pitts et al., 2010; Randel et al., 2016, 2018; Bae et al., 2019). As such, the following hypotheses are offered:

H2. *The information elaboration process emanating from particular diversity management strategies positively moderates the relationship between diversity and public organizational performance.*

H2A. *Diversity-friendly leadership styles positively moderate the effects of diversity on public organizational performance.*

In addition, inclusive and fair organizational climates and cultures contribute to the diversity-performance relationship by inhibiting social categorization and promoting information elaboration (Sabharwal, 2014; Weisinger et al., 2017). Inclusive and open organizational climates or culture help to overcome the negative effects from social categorization by embracing the values of different identity subgroups within the organization (e.g., Ajeigbe, 2019; Chatman & Spataro, 2005; Goncalo et al., 2015). This not only increases the opportunities for collaboration, exchange of ideas and innovation, but it can also increase public employees' job satisfaction (Avery & McKay, 2010). Thus, the following hypothesis is offered:

H2B. *Diversity-friendly organizational climates/cultures positively moderate the effects of diversity on public organizational performance.*

Training programs provided by organizations can also be beneficial to developing information elaboration. Diversity-oriented training programs have been found to mitigate prejudice toward specific identity groups and facilitate positive attitudes toward culture and value differences which eventually leads to consensus across multiple identity subgroups within organizations (Bezrukova et al., 2012, 2016; Sabharwal, 2014). Through supportive diversity training programs, socially marginalized groups can improve their status and power of voice within organizations, which also helps to increase internal accountability and overall performance (Arai et al., 2001; Kulik & Roberson, 2008). Based on existing research, the following hypothesis is offered:

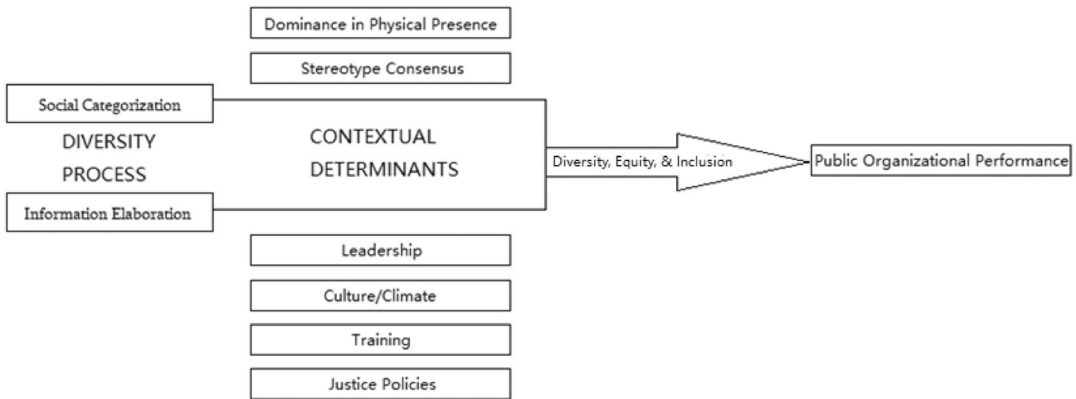


FIGURE 1 Categorization-Elaboration Model and diversity-performance relationship in public organizations

H2C. *Diversity training programs can positively moderate the effects of diversity on public organizational performance.*

Additionally, certain internal organizational policies oriented toward procedural or organizational justice are likely to contribute to the positive effects of diversity on public organizational performance. Defined as “the fairness of the means by which an allocation decision is made” (Greenberg, 2002, p. 123) procedural justice is central to successful inclusion processes in organizations (Fischer et al., 2011; Rubin & Alteri, 2019). It allows individuals to be highly aware of their inclusion in organizations, which can increase job satisfaction and commitment to the organization, and ultimately enhance their contributions to overall effective organizational performance (Carrell & Dittrich, 1978; Cohen-Charash & Spector, 2001; Colquitt, 2001; Fischer et al., 2011; Kim & Park, 2017; Langbein & Stazyk, 2013). Thus, the following hypothesis is offered:

H2D. *Procedural and/or organizational justice policies can positively moderate the effects of diversity on public organizational performance.*

Figure 1 summarizes how the relationship between diversity and public organizational performance along with its contextual moderators is explained by CEM.

5 | DATA AND METHOD

Meta-analysis is conducted in this study to examine the effect of diversity on public organizational performance and the contextual factors moderating the relationship. Meta-analysis statistically examines the empirical results throughout all possible existing quantitative studies in order to generalize the research findings on the specific relationships at issue (Glass, 1976). Following its applications in other fields such as psychology and business management, meta-analyses have been greatly relied upon to explore research questions in public administration (see, e.g., Ding et al., 2021; George et al., 2019; Harari et al., 2017; Homberg et al., 2015; Lu, 2018).

Compared with conventional literature reviews, meta-analysis provides more possibilities for generalizations based on large scale literatures (Ringquist, 2013). It enables researchers to quantitatively aggregate the findings from primary studies to form coherent results that are generalizable across existing literature. Moreover, it can assist in advancing theories in that it collects all possible results from different empirical settings. In sum, meta-analysis allows

us to not only summarize the findings in existing studies on the relationship between diversity and public organizational performance, but also identify the effects of contextual factors constructed from CEM on such an interaction.^v

5.1 | Literature search and inclusion criteria

The meta-analysis began with a systematic search of literature on the effects of diversity on public organizational performance. Three search strategies, for the purpose of inclusiveness, were employed to identify relevant literature following the best practices suggested by Reed and Baxter (2009) and Ringquist (2013). First, using three academic databases such as EBSCO (for peer-reviewed journal articles), Web of Science (for peer-reviewed journal articles), and ProQuest (for dissertations), all eligible articles with “diversity AND performance AND public organization,” “diversity AND performance AND public management,” or “diversity AND performance AND public service” in the title, abstract, or full text were included. Second, the search was repeated using Google Scholar^{vi} on the newly published and highly cited academic works referenced and those references which shared the same keywords in the searching scheme of database records were added. Third, since diversity management has also been assumed vital to bureaucratic representation (e.g., Groeneveld & Van de Walle, 2010; Selden, 1997), for any missing articles in the first two stages, this study also checked the “Representative Bureaucracy Database” compiled through the Project for Equity, Representation and Governance, directed by Kenneth J. Meier in 2018. The literature search was conducted in September 2020 and a sum of 497 articles were collected.

These collected articles were also screened as follows to identify those eligible for the present meta-analysis. We first reviewed the abstracts of the collected articles and identified 497 potentially relevant studies. We then performed full-text reviews, using the following four inclusion criteria. First, the focal predictor, *diversity*, should be operationalized as demographic diversity in the eligible studies. Students of public management tend to frame diversity inspired by representative bureaucracy, as reflected by the focus of empirical studies on the variance in demographic factors of representation such as race, ethnicity, age, and gender (Meier, 2019). Diversity is measured most frequently via three approaches, including the coefficient of variation, the Blau index of heterogeneity, and the entropy index of diversity. Specifically, a coefficient of variation is used for continuous variables such as age and tenure, and both the Blau index and entropy index are suitable to measure categorical variables such as gender, race/ethnicity, and functional and educational background (e.g., Bantel & Jackson, 1989; Jackson et al., 1991; Miller & Quigley, 1990).^{vii} We followed this practice in the present analysis.

Second, the dependent variable, *organizational performance*, tends to be operationalized in the literature of diversity through the approaches that parallel those in the literature of representative bureaucracy. In this sense, public organizational performance in diversity management studies includes not only what has been conventionally constructed in terms of “efficiency” and “effectiveness,” but also the organizational outcome of democratic processes as “equity” (e.g., Andersen et al., 2016; Boyne et al., 2010; Fernandez & Lee, 2016; Walker & Andrews, 2015). Moreover, apart from the conventional measures of public organizational outcome such as task performance and goal achievement (e.g., Andrews & Ashworth, 2015; Andrews et al., 2016; Choi & Rainey, 2010; Fernandez & Lee, 2016; Portillo & DeHart-Davis, 2009), there has been an increasing number of studies focusing on diversity-affected public organizational performance from a broader perspective including client satisfaction, reduced inequity, and resource distribution (e.g., Choi, 2013; Gates & Mark, 2012; Oberfield, 2014). We thus adopted this broader treatment, which also enhances the external validity of our analysis.^{viii}

Third, studies with only descriptive statistical results or without correlation coefficients or *t*-statistics were eliminated since they lack information to generate effect sizes. Based on such a refined full-text review, 37 studies met the inclusion criteria and thus serve as our final sample for the meta-analysis. These 37 studies include 34 published studies and three unpublished studies (“gray studies”).^{ix} The PRISMA flow diagram describing the detailed procedures of the literature search is presented in Figure 2.

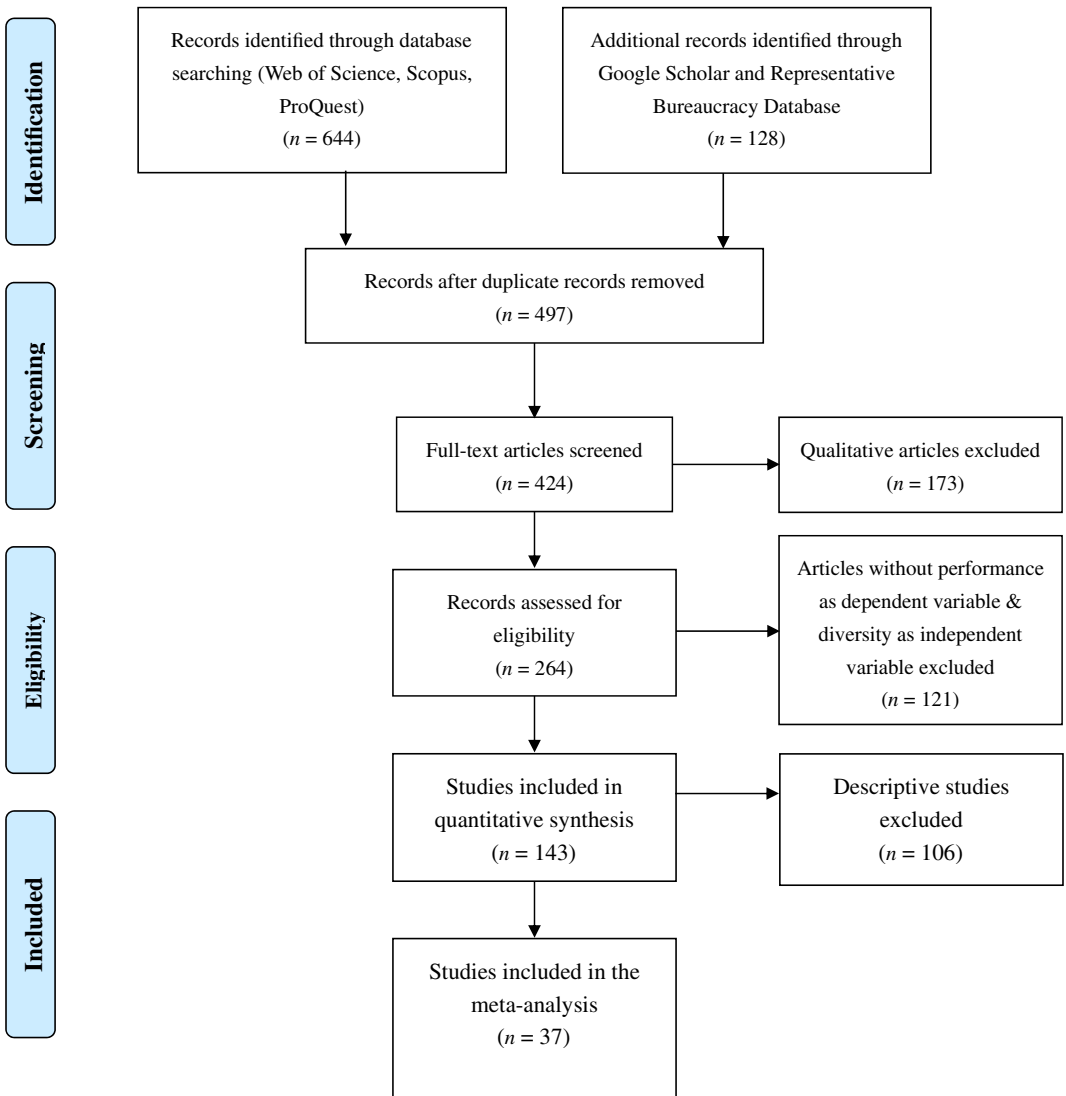


FIGURE 2 PRISMA flow diagram (2020.9.4) [Color figure can be viewed at wileyonlinelibrary.com]

5.2 | Coding procedures

Next, we extracted and coded information from the selected studies. Two categories of information were coded in the synthesis—effect size and moderator (Lipsey, 2009).

The present study calculated correlation-based (r -based) effect sizes to describe the standardized associations between the focal predictor *diversity* and the dependent variable *public organizational performance*. The correlation coefficient r , if not provided in the primary study, was calculated using the following equation: $r = \sqrt{\left[\frac{t^2}{t^2 + df}\right]}$, where t is the t -score testing the null hypothesis that the population correlation $Rho = 0$, and df is the degrees of freedom.

Since the effects in some primary studies were either generated from non-linear correlation or with more complex conditions to generate r , we implemented several modification strategies, following the suggestions from Hedges

TABLE 1 Distribution of moderators within the sample

Contextual moderators	Study-level distribution (%)	Effect size-level distribution (%)
Dominance in physical presence	54.05	54.94
Stereotype consensus	48.65	58.10
Leadership	78.38	58.50
Culture/Climate	81.08	64.82
Training	72.97	60.08
Organizational justice policy	70.27	57.31

Note: Multiple contextual moderators can be included in one study so that the cumulative percentage does not equal to 100%.

(2009) and Ringquist (2013). Some studies explore the relationship between diversity and public organizational performance through a mean comparison technique so that the group-difference-based effect sizes (Cohen's d) were first calculated based on either the mean difference (including regression coefficients of dummy variables) or a t -statistic and then transformed into r . Another group of primary studies specified the dependent variable—that is, public organizational performance—into dummy variables; therefore, odds-based effect sizes were first adopted and then converted into r . Additionally, t scores or z scores at the corresponding symbol levels of significance were introduced to estimate the values of r for the effect sizes in studies only reporting regression coefficients with significant levels using asterisks. This allows more effect sizes as well as studies to be included despite the resulting underestimation from using the benchmark values at different significance levels, which increases the inclusivity and thus generalizability of the meta-analysis. Last, the effect sizes for correlations only reporting statistical insignificance were coded 0.

Moreover, in studies containing multiple effect sizes, the r of all the effect sizes were calculated to maintain the within-study variation. Further, in order to correct the small bias associated with correlation coefficient r , Fisher's z was applied to represent the correlation-based effect sizes and was calculated using the following equation: $Z_r = 0.5 \ln \left[\frac{1+r}{1-r} \right]$, with variance $V[Z_r] = \frac{1}{(n-3)}$. Finally, 253 effect sizes were drawn from 37 primary studies.

To affirm the hypotheses related to the contextual factors affecting the relationship between diversity and public organizational performance, the moderators of the diversity-performance correlations in the primary literature were specified according to information from both research design and the empirical settings. Specifically, six dichotomous moderators were generated based on the CEM hypotheses stated above. From the perspective of social categorization, *dominance in physical presence* was coded as 1 when the value of diversity measures was greater than the median of the group of all diversity measures (including variation coefficient, Blau index, and entropy index) queuing from 0 to 1, with the rest coded 0; *stereotype consensus* was coded 1 for the identification of discrimination and inequity toward specific demographic groups examined in individual articles as diversity constructs while the others were coded 0. Similarly, from the perspective of information elaboration, *diversity-friendly leadership*, *climate/culture*, *diversity-related training*, and *organizational/procedural justice policy* were manually coded as four dummy variables based on the original description of the empirical settings in the individual studies. Specifically, diversity-friendly leadership refers to the leadership illustrated to embrace diversity in the public workforce; diversity culture/climate were identified based on whether there were shared perceptions or understanding about recognizing and appreciating individual differences across public employees as recorded in the empirical contexts; diversity-related training programs encompassed any training programs that helped foster DEI mentioned as background information of the empirical inquires; and organizational/procedural justice policies included any internal policies ensuring the justice during the operation of public organizations. Table 1 provides the distribution of these moderators within our sample.

6 | RESULTS

6.1 | Average effect size analysis

The mixed effects of diversity on public organizational performance, resulting from the coexistence of two diversity functions of social categorization and information elaboration, were confirmed by the distribution of the effect sizes. A total of 253 effect sizes of the relationship between diversity and public organizational performance range from -0.303 to 0.208 . One hundred and forty-six of all the individual effect sizes demonstrated a positive association, which shows the beneficial impact of diversity on public organization performance. However, 98 effect sizes demonstrated a negative association, which implies that organizations are not effectively managing their diversity programs. The remaining nine effect sizes yield no association between the two variables. The study-level distribution of effect sizes across the 37 studies is presented in Figure 3.

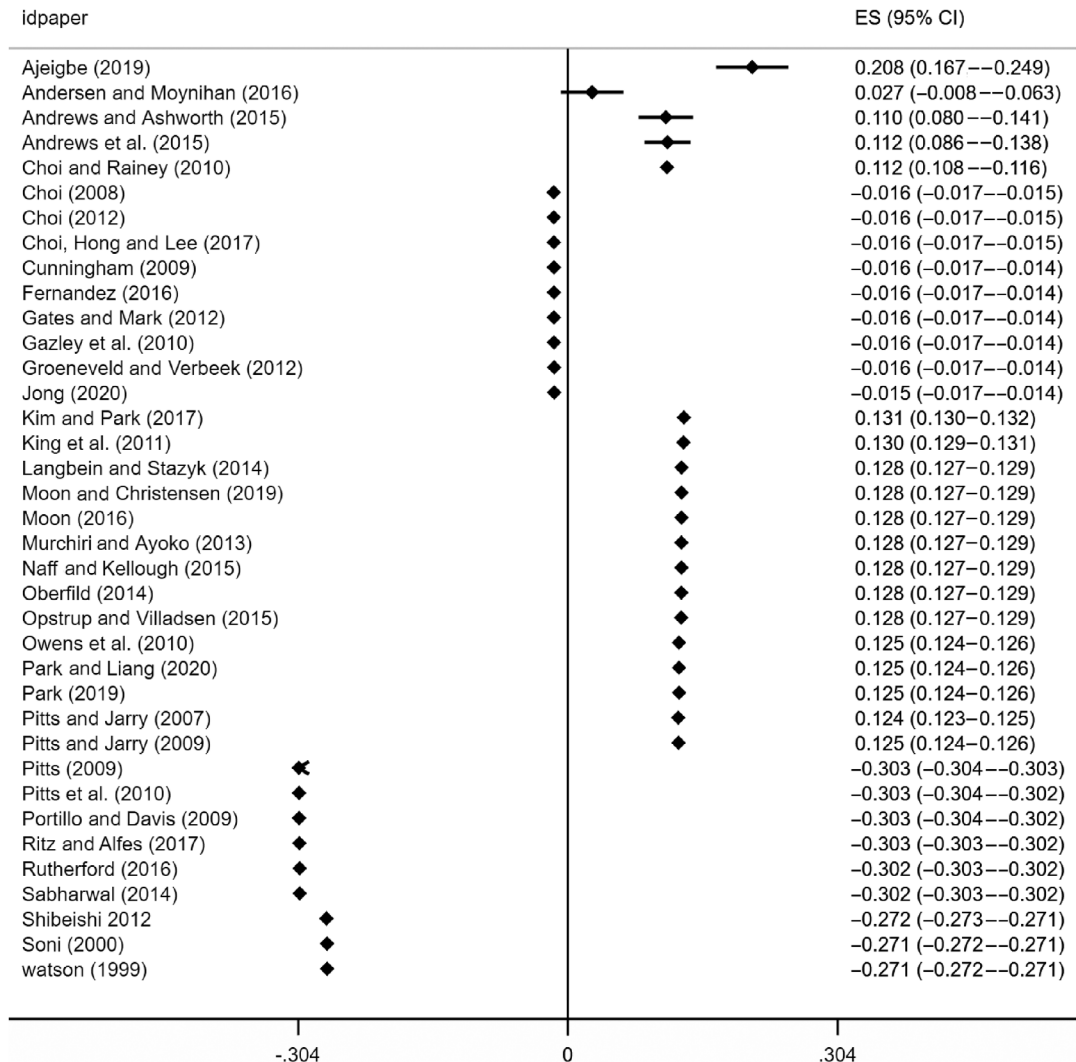


FIGURE 3 Distribution of study-level effect sizes across existing studies

The average effect size across primary studies also produced an interesting finding with respect to the relationship between diversity and organizational performance. The effect size heterogeneity was investigated through the Q-test, in order to select the appropriate calculating strategy between fixed-effects and random-effects models. The Q statistic is much greater than 3 with 252 degrees of freedom, suggesting that its corresponding *p*-value is smaller than 0.01. This result indicates that the null hypothesis, that the variation among the effect sizes can only be explained by sampling error, was rejected at 0.01 confidence level. Moreover, the I^2 statistic of 99.9% also implies a high level of heterogeneity across effect sizes (Higgins & Thompson, 2002). Thus, the random-effects model was applied to generate an average effect size of 253 effect sizes from 37 studies, and the weighted average effect size in Fisher's *z* is 0.062. However, the 95% confidence interval of the average effect size is (−0.077 to 0.202), which suggests that the null hypothesis that the average effect size is 0 cannot be rejected at 0.05 level of confidence. It is evident that apart from its merits, diversity can also neutralize public organizational performance in some cases, suggesting, as noted above, that diversity programs are not being managed effectively. Thus, the complex nature of diversity effects on public organizational performance as assumed in CEM is empirically supported by both the divergence in effect size distribution across studies and the insignificant average effect sizes (e.g., Bradbury & Kellough, 2008; Lim & Zhong, 2006; Selden, 1997; Thomas & Ely, 1996; Wilkins & Williams, 2008).

6.2 | Findings: Meta-regression analysis

Once the assumed the mixed performance impact of diversity has been affirmed, it is necessary to determine its major contextual factors. A meta-regression analysis was conducted to further evaluate the systematic variability in effect sizes created by the moderators from both perspectives of social categorization and information elaboration: dominance in physical presence, stereotype consensus, diversity-friendly leadership, diversity climate and culture, diversity-oriented training, and organizational justice policies. The regression model is specified as follows:

$$ES_i = b_0 + b_1 \text{Salience}_i + b_2 \text{Stereotype}_i + b_3 \text{Leadership}_i + b_4 \text{Climate\&Culture}_i + b_5 \text{Training}_i + b_6 \text{Justice}_i + b_7 \text{PublicationBias}_i,$$

where ES_i refers to the raw effect size in original study i in terms of Fisher's *z*; for the two moderators of social categorization, Salience_i refers to whether there is any identity group dominant in physical presence (based on the calculated diversity index) in the diverse organizational setting or staff composition examined in the study (Yes = 1, No = 0). Stereotype_i refers to whether there is any identity group that is scholarly recognized as being marginalized or socially-discriminated against in the diverse organizational settings examined in the study; for the four moderators of information elaboration (Yes = 1, No = 0). Leadership_i refers to whether the public organizations under study have leaderships that have found to embrace diversity (Yes = 1, No = 0). $\text{Climate\&Culture}_i$ refers to whether the public organizations under study have diversity-friendly climates and (or) cultures (Yes = 1, No = 0). Training_i refers to whether the public organizations examined have diversity-oriented training programs (Yes = 1, No = 0). Justice_i refers to whether the public organizations examined have organizational/procedural justice policies (Yes = 1, No = 0), and $\text{Publication Bias}_i$ refers to whether a study appeared in a peer-reviewed publication outlet (published study = 1 and unpublished study = 0).

The present study used modified meta-regression models to address effect size heteroscedasticity and non-independent observations. Heteroscedasticity is a major problem affecting the validity of the meta-regression results since the effect sizes were generated from studies with various sample sizes. To maintain the within-study variability, we retained all the effect sizes eligible for the meta-analysis from original studies, rather than selecting the most representative effect sizes, which may also undermine the observation independence (Ringquist, 2013). These two problems are difficult to be resolved by traditional multivariate analysis. We followed the best practices suggested by Ringquist (2013) to apply clustered robust variance estimation (CRVE) and generalized estimating equations (GEE) to specify the meta-regression model (Ringquist, 2013). CRVE alleviated the effect of heteroscedasticity by introducing

a clustered robust parameter variance–covariance matrix suggested by White (1980). And GEE maintains the contribution of studies with fewer effect sizes by downplaying the importance of number of effect sizes on regression results (Liang & Zeger, 1986). With these two strategies, the meta-regression model is more assured to estimate meta-regression parameters.

The meta-regression results using both CRVE and GEE models are presented in Table 2. Both models had the F -statistic and Wald χ^2 statistic with corresponding p -values smaller than 0.01, which indicated model significance. As showed in Table 2, the two models yield similar results.

From the perspective of social categorization, the meta-regression yields different results for the two moderators. As assumed, the relationship between diversity and public organizational performance will be negatively moderated if there is an identity subgroup with dominance in physical presence (i.e., Whites) compared to other subgroups. In line with the hypothesis, both CRVE and GEE models demonstrated significant and negative coefficients of the variable of *Salience_i* ($b_{\text{CRVE}} = -0.3176, p < 0.01$; $b_{\text{GEE}} = -0.2584, p < 0.01$), which implies a negative moderating impact of White-dominated identity (e.g., in the United States) salience on the relationship between diversity and public organizational performance. This affirms, in the context of social categorization, *H1A* that when Whites are the dominant subgroup, the effect of diversity on performance will be negative, unless diversity is properly managed within the organization.

However, stereotype consensus as one source of social categorization in diverse organizational settings might not significantly determine the impact of diversity on public organizational performance. In both models, *Stereotype_i* as the coefficient of the variable representing marginalized or discriminated against social status of identity subgroup(s) is negative as expected, but it is not statistically significant ($p > 0.1$). The insignificant regression results imply that there is no significant difference in the diversity effects on public organizational performance between the diverse public workforce including identity subgroups that suffer from the consensualized stereotyping and that without such identity subgroups; in effect, *H1B* is disproved. Thus, *H1* that the social categorization process of diversity driven by identity salience negatively moderates the interaction between diversity and public organizational performance only holds when Whites are the dominant subgroup.

From the perspective of information elaboration, four regressors of moderators yielded different results. First, the difference in effects of diversity between public organizations with and without diversity-friendly leaderships is

TABLE 2 Meta-regression of diversity–Public organizational performance relationship

Moderator	CRVE	GEE
Dominance in physical presence	−0.3176*** (0.0951)	−0.2584** (0.1066)
Stereotype consensus	−0.1105 (0.0852)	−0.2001 (0.1226)
Leadership	0.8039*** (0.1651)	0.8335*** (0.1769)
Culture/Climate	−0.0442 (0.1416)	−0.0232 (0.1433)
Training	0.5933** (0.2532)	0.5240** (0.2060)
Organizational justice policy	−0.7206*** (0.2464)	−0.6832*** (0.2273)
Publication bias	−0.0030 (0.1114)	−0.0090 (0.1276)
Constant	−0.0817 (0.1798)	−0.0653 (0.1727)
No. of effect sizes	253	253
No. of studies	37	37
F	5.47***	
R^2	0.3459	
Wald χ^2		76.08***

Note: Robust standard errors in parentheses. Significant at *0.1, **0.05, ***0.01.

Abbreviations: CRVE, clustered robust variance estimation; GEE, generalized estimating equations.

discovered, which confirms *H2A*. In both CRVE and GEE models, *Leadership_i*, which represents the identification of public organizational leadership that embraces diversity, has a positive and significant coefficient ($b_{\text{CRVE}} = 0.5933$, $p < 0.05$; $b_{\text{GEE}} = 0.8335$, $p < 0.01$). As expected, this implies that workforce diversity in public organizations produces better outcomes when the affected public organization has diversity-friendly leadership.

Nevertheless, the moderating effect of diversity climate and (or) culture on the relationship between diversity and public organizational performance is not detected. In both meta-regression models, the coefficients of *Climate&Culture_i*, which represents the identification of diversity climate and (or) culture in the examined public organizations, are negative and not significant ($p > 0.1$). This suggests that there is no substantive difference in the diversity-performance relationship between public organizations with or without a supportive diversity climate and (or) culture; thus, *H2B* is not supported.

Similar to diversity-friendly leadership, the existence of diversity-training program(s) is found to help improve the diversity-performance relationship in public organizations. The coefficients of *Training_i* in both CRVE and GEE models are positive and significant ($b_{\text{CRVE}} = 0.0385$, $p < 0.05$; $b_{\text{GEE}} = 0.5240$, $p < 0.05$), which suggests that public organizations with diversity training programs tend to have better diversity-performance relationships than those without such programs. Thus, *H2C* is supported.

Even though the meta-regression yields a significant result, the moderating effect of organizational justice policies does not work as expected. Both models produce significant coefficients for the regressor *Justice_i* while they are negative ($b_{\text{CRVE}} = -0.7206$, $p < 0.01$; $b_{\text{GEE}} = -0.6832$, $p < 0.01$), which implies that public organizations with organizational/procedural justice policies tend to have poorer diversity-performance relationships than those without such policies. This runs counter to what was expected in the present study, and thus, no support was found for *H2D*. In sum, based on our findings, the anticipated diversity benefits of information elaboration to the diversity-performance relationship are available only if public organizations have diversity-friendly leadership and diversity training programs.

Last, the modified meta-regression of present study also manages the issue of publication bias. As a frequently addressed methodological issue in meta-analysis, the systematic difference in effect sizes between published and unpublished works is likely to deviate the results of meta-analysis (Sutton, 2009). Despite the three unpublished studies (14 effect sizes) included in the meta-analysis, additional steps are needed to prove the potential publication bias. Whereas the Egger test cannot reject the null hypothesis of no publication bias ($p > 0.1$), the Begg test statistic is suggestive of significant publication bias ($p < 0.01$). Since both Egger and Begg test results could not detect how seriously publication bias may affect the meta-regression results (Ringquist, 2013), this study further compares the effect sizes from published and unpublished studies by specifying a dummy variable *Publication Bias_i*. In both CRVE and GEE models, the coefficients of publication bias indicate that effect sizes from published studies are smaller than those from unpublished studies, but the difference is barely recognizable in size ($b_{\text{CRVE}} = -0.0030$, $p < 0.01$; $b_{\text{GEE}} = -0.0090$), and is not statistically significant ($p > 0.1$). In other words, the deviating effect of unpublished studies on the effect sizes is not significant. In sum, there is little evidence that effect sizes in the diversity literature are contaminated by publication bias.

7 | DISCUSSION: WHAT SHAPES THE EFFECTS OF DIVERSITY ON PUBLIC ORGANIZATIONAL PERFORMANCE?

As expected in CEM, contextual factors of both diversity functions—social categorization and information elaboration—are found to significantly determine the configurations of diversity effects on public organizational performance. From the perspective of social categorization, identity salience in terms of dominance in physical presence of certain identity subgroups of the diverse workforce within the organization is likely to produce a negative impact on public organizational performance, as demonstrated by the meta-regression analysis. This indicates that dominant subgroups (e.g., White in race and Men in gender in the United States) in significant size hold their major stake within

organizations, and in turn, marginalize and suppress the voices of other disadvantaged subgroups. In effect, salient identity subgroups (White men) marginalize the “minority” subgroups by means of overlooking their interests, values and desires (Wegge et al., 2008). Moreover, salient identity subgroups are able to establish value dominance and build what is termed “Faultline strength,”—a tendency of homogenization across subgroups within diverse workforces—which closes down the space of mutual understanding and thus leads to intraorganizational conflicts (van Knippenberg et al., 2004). In relation to our study, identity salience was empirically found to both neutralize public organizational cohesion and attenuate the voices, interests and representation of “minority” social identity groups, which places substantive threats to public organizational performance (e.g., Gilad & Alon-Barkat, 2018; Park, 2020). Again, the findings speak to the significance of diversity-oriented training programs and diversity-friendly leadership, which help positively moderate the effects of diversity in public workforce. The findings also point to the importance of ensuring that no group dominates in terms of physical presence in public organizations.

However, the negative effect of social categorization in terms of the consensualized stereotypes toward specific identity subgroups on the diversity-performance relationship is not found in the meta-regression. There are at least two possible explanations for this. First, many effect sizes with subgroups being discriminated against possess high diversity indexes. This implies that the negative performance effect from discrimination against certain identity subgroups as a result of consensual stereotyping may be alleviated by high levels of staff diversification within the public organization (Randel, 2002; Taylor et al., 1978; Wegge et al., 2008). This suggests that stereotype consensus toward certain identity subgroups will no longer be recognizable within highly diversified workforces. Moreover, the insignificant moderating effect of stereotype consensus can be attributed to organizational identification. Public sector organizational identity is driven by promoting and advancing the public interest; this may downplay the perceived stereotypes of specific subgroups within public organizations, which also diminishes the negative effect from diverse workforces (e.g., Rawski & Conroy, 2020). Thus, the unexpected finding is also suggestive of the value of diversification and public-interest-embedded organizational identification to mitigating the negative effect of consensual stereotyping in the public organizations.

From the perspective of information elaboration, the positive direction of diversity for public organizational performance can also be explained by the significant moderating effects of diversity-friendly leadership styles and diversity training programs. As expected, diversity-friendly leadership is found to improve the diversity-performance relationship in public organizations. As discussed previously, leadership styles embracing diversity, equity, and inclusion can drive diversity to benefit public organizational settings through building communication and information exchange (e.g., Greer et al., 2012; Nishii & Mayer, 2009).

However, an organizational culture or climate that supports diversity is not found to have substantive a positive moderating effect on the interaction between diversity and public organizational performance. The results are contrary to what has been frequently *assumed* in the literature on diversity and diversity management (e.g., Ashkali & Groeneveld, 2015; Boehm et al., 2014; Choi, 2013; Goncalo et al., 2015; Moon & Christensen, 2020). One possible reason can be the lack of mechanisms to transform the perception of diversity values into substantive mutual understanding. The lack of inquiries on such mechanisms suggests that a prototypical institutional design has not been established in the public sector for developing inclusive climates or cultures, which would construct a shared understanding of diversity, equity, and inclusion (see e.g., Sabharwal, 2014); thus, the cultural contribution of the information elaboration function of diversity to public organizational performance was not triggered.

Our findings further indicate that diversity-oriented training programs have a positive effect on diversity-performance relationships in public organizations. The conflicts and biases between individual identity subgroups within diverse populations tend to be difficult to resolve (Nederveen Pieterse et al., 2013). Thus, compared with incremental socialization processes, active interventions are more likely to create mutual understandings in terms of serving the public, which helps dissipate tensions between identity subgroups in diversified working environments, and ultimately improves organizational performance (Jong, 2019). This finding confirms the importance of active managerial interventions to ensure that the information elaboration process of diversity will produce benefits for public organizational performance.

Surprisingly, organizational or procedural justice policies seem to be counterproductive in their moderating effects on the diversity-performance relationship. Contrary to our expectations (e.g., Kim & Park, 2017; Pichler et al., 2017; Rubin & Weinberg, 2016), the meta-regression found that public organizations with organizational or procedural justice policies tend to have poorer diversity-performance relationships than those without such policies. It may be that public organizations tend to express a focus on organizational justice, but employees do not *perceive* the existence of justice. In particular, the findings suggests that there are different perceptions of procedural justice between individual identity subgroups (e.g., Choi, 2013; Nisar, 2018; Rubin & Pérez Chiqués, 2015; Walker & Brewer, 2009).^x Thus, the effectiveness of organizational justice policies to improving public organizational performance needs to be reconsidered in the context of diversity management.

8 | CONCLUSION

The relationship between diversity and public organizational performance requires much more research, and CEM is a theoretical framework that could help guide this research. Previous research mostly finds that diversity can have positive or negative effects but the potential negativity can be effectively managed (e.g., Choi & Rainey, 2010; Moon, 2016, 2018; Pitts, 2005). This study sought to explicitly connect the multiplicity of diversity effects on public organizational performance with CEM, which has been broadly applied in business or generic settings (Guillaume et al., 2017; Nederveen Pieterse et al., 2013; van Knippenberg et al., 2004). Meta-analysis quantitatively generalized the contextual determinants of the diversity-performance relationship in public organizations. The detected divergent diversity-performance relationships indicated the coexistence of the diversity function of social categorization—shaped by the demographic status of the diverse working setting—and that of information elaboration—shaped by specific managerial designs or schemes.

The present research can significantly contribute to a theoretical framework for studying the effects of diversity and diversity management in public organizations. By introducing CEM, which draws from other social sciences disciplines, it argues that, rather than being either beneficial or detrimental, the effects of diversity on public organizational performance are the combination of the dual diversity functions of social categorization and information elaboration, which has been supported by the divergent distribution of effect sizes in the meta-analysis. This also implies the difficulty of interpreting the direct multiple effects of diversity on public organizational performance unless the conditions shaping the diversity-performance relationship are specified based on the categorization-elaboration dichotomy.

Importantly, our research suggests that demographic diversity is just the starting point of understanding diversity effects. Identifying the specific contexts that shape the different diversity impacts is very important apart from simply pointing out or describing the original demographics that comprise diversity. CEM purports to rationalize the different effects from demographic diversity, both positive and negative, by discussing the possible mechanisms that result in the variation in diversity effects. Based on CEM, social categorization is the mechanism that generates negative diversity impacts while information elaboration generates positive diversity impacts. The goal here is to provide another useful framework for studying impact of diversity on public organizational performance. This is particularly important as the preponderance of research on diversity in public sector workforces has illustrated that the effects of diversity are ambiguous.

In terms of the practical implications of this research, it is clear that public organizations that actively encourage the exchange and integration of perspectives of diverse groups will help to increase organizational performance. In addition, effective management strategies can improve public organizational performance—those strategies include clearly identifying the governments' interests in serving the public and harnessing the power of diverse workforces to promote and help fulfill those interests. The research also shows that diversity-friendly leadership styles and diversity training programs help to improve public organizational performance.

The findings in the present study have several implications for the future inquiry. First, the contextuality of the direct diversity effects should be carefully considered before discussing the approaches of managing diversity in

public organizations. As CEM suggests, the effects of diversity within organizational settings are jointly constructed by the social categorization process stemming from the demographic identity of subgroups that make up the workplace and the information elaboration process from the technical system, or the structural features of the organizations (Cummings, 1978, p. 626; van Knippenberg et al., 2004). Thus, diversity effects can be accurately described only if the major contextual factors shaping the above two processes have been determined.

Moreover, effective diversity management in the public sector *cannot* be achieved until individual contextual factors that contribute to the different diversity functions—social categorization and information elaboration—have been fully understood. The results of the advanced meta-regression in the present study can at least offer some directions for the future exploration of diversity and diversity management. From the perspective of social categorization, the significant negative moderating effect of identity salience implies that the dominance in physical presence of certain identity subgroups within diversified workplaces is a major factor that hinders the development of healthy diversity-performance relationships in public organizations (King et al., 2011; Randel, 2002). Why do dominant subgroups continue to prevail and marginalize the benefits that can be offered and provided by for other subgroups (e.g., White Male vs. other ethnoracial groups in the United States)? How can organizations correct these imbalances? This is an area that requires further study (e.g., Cole et al., 2016; Rawski & Conroy, 2020).

From the perspective of information elaboration, it is imperative to pay special attention to the establishment of appropriate diversity management strategies or designs that will benefit diversity-performance relationships in public organizations. As this study shows, the role of leadership is critical; however, the actual leadership style that will substantively benefit diversity management has not yet been systematically defined (for partial definitions, see e.g., Buyl et al., 2011; Somech, 2006). This suggests that the current model derived from CEM requires further adjustments in order to assist public organizations in developing the particular leadership strategies that will be effective for leading and managing diversity within the workplace.

Because our findings show that a supportive diversity culture or climate did not improve organizational performance, further research is needed to reify the substantive benefits of diversity to public organizational performance. It may be that fostering a diversity culture or climate needs to be complemented by effective diversity training programs.

Additionally, the unexpected negative impact of organizational or procedural justice policies on diversity-performance relationships suggest that, despite the narrative in the existing literature (e.g., Potipiroon & Rubin, 2018; Rubin & Weinberg, 2016), balancing organizational justice and performance in public organizations is still an important issue to explore in the future. One suggestion is to address the impact of informational justice on the diversity-performance relationship. Informational justice refers to providing accurate information to others with honesty, integrity and trustworthiness; this, in effect, helps to signal acceptance by the in-group and promotes collective esteem. It is significant in that it can be created by workers themselves as opposed to by the organization (Colquitt, 2001; Lee, 2021).

Apart from the valuable insights it provides, the present study is not without limitations. First, the usual caveats related to cross-sectional analysis cannot be eliminated from the current meta-analysis since most studies included rely on cross-sectional data. Thus, our results might be best understood as correlative rather than causal relationships. Second, comparisons of diversity-performance relationships in public organizations within different countries has not been considered in this research, in that the effect sizes were mostly extracted from studies in the United States and countries with similar diverse demographics and political institutions (e.g., western European countries). There are too few diversity management studies available in countries or regions with different demographic structures and regimes (e.g., only one study each on Korea, Egypt, Turkey was included in the meta-analysis). Thus, applying the CEM to diversity studies outside the United States is encouraged.

Finally, the diversity-performance relationship investigated was specified based on the generic CEM in terms of its coding method, and the meta-analyses mostly examined the factors that are dichotomous and representative in the current literature; thus, the present study could not exhaust all the potential contingency factors.^{xi} Similarly, potential moderators that were not examined in the primary studies relied upon in this meta-analysis (e.g., critical

mass) were omitted. Addressing the limitations will provide additional avenues for not only the empirical testing of the highly contextualized diversity effects on public organizational performance but will also assist in developing diversity management theories which can be applied to the public sector.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTES

- ⁱ Sabharwal (2014) finds that diversity management by itself is insufficient to improve organizational performance. She points out that key to diversity's positive effects is supportive leadership, which empowers employees and is inclusive of their opinions and views. Our research may fill in gaps here.
- ⁱⁱ Although there has not been a universal definition of organizational communication, in its simplest form it is defined by organization theorists such as Conrad and Poole (2012) as communication that occurs within organizations, with communication generally defined as the process through which the use of verbal and nonverbal signs and symbols occur. Thus, verbal communication that achieves information elaboration is referred to as one form of organizational communication.
- ⁱⁱⁱ Stereotype consensus is derived from the self-categorization component of CEM. It suggests that this consensus is produced by shared social identification and collectively coordinated, even if unconsciously, perceptions and behaviors (see, e.g., Haslam et al., 1999).
- ^{iv} Instances describing the functions of diversity-friendly leadership in the business management literature include offering platforms for information sharing (Buyl et al., 2011), fostering unified organizational values to overcome intergroup bias (Kearney & Gebert, 2009), and developing inclusive and respectful leadership styles (Somech, 2006).
- ^v The logic for constructing our contextual moderators draws on recent meta-analyses such as "Meta-analysis of collaboration and performance: Moderating tests of sectoral differences in collaborative performance" (Lee & Hung, 2022) and "Does strategic planning improve organizational performance? A meta-analysis" (George et al., 2019).
- ^{vi} Google Scholar provides a comprehensive coverage of scholarly literature in a variety of publishing formats such as journal articles, books, book chapters, and conference papers. The reliance on Google Scholar in the search allowed us to reach a diverse set of studies.
- ^{vii} We also specified moderators for the three diversity measures. There are 18 articles using variation coefficients, 16 using Blau index, 3 using entropy index. However, we did not find significant effects from any of these measures, and their inclusion did not distort the moderating effects of other contextual factors. See Appendix A (Table A1) for the results of robustness check.
- ^{viii} As for organizational performance, 8 articles focused on effectiveness, 21 on efficiency, 2 on representation, 2 on equity, and 4 on multiple dimensions. As a performance dimension which is different from diversity, representation was measured by the treatment of certain socially disadvantaged groups in public service organizations such as promotion of workers of color and of women (e.g., Naff & Kellough, 2003). We followed the coding procedure of published meta-analysis articles in *Public Administration Review* to measure these dimensions; see the operation of literature searches and coding in articles such as "How bureaucratic representation affects public organizational performance: A meta-analysis" and "Does strategic planning improve organizational performance? A meta-analysis." We also specified moderators for these performance dimensions but we did not find significant effects from any of these measures, and their inclusion did not distort the moderating effects of other contextual factors. See Appendix B (Table B1) for the results of robustness check.
- ^{ix} We followed the traditional practice to consider a study that is not published in a peer-reviewed academic journal as unpublished or gray literature (Rothstein & Hopewell, 2009).
- ^x This finding may reflect an endogeneity problem, in that research especially in the private sector treats equity as part of organizational justice, which would lead to simultaneous causality (see, e.g., Balassiano & Salles, 2012; Wooldridge, 2002).
- ^{xi} For instance, the effects of dummy variables of three diversity measures, namely variation coefficient, Blau index, and entropy index, as well as the multiple performance measurements, were not significant so that they were excluded from the final meta-regression in order to prevent autocorrelation problem.

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APPENDIX A: ROBUSTNESS CHECK FOR DIVERSITY MEASURES

TABLE A1 Robustness check with different diversity measures

Moderator	CRVE	GEE
Dominance in physical presence	-0.3369*** (0.1205)	-0.2646** (0.1132)
Stereotype consensus	-0.1501 (0.1177)	-0.1995 (0.1301)
Leadership	0.7952*** (0.1661)	0.8325*** (0.1780)
Culture/Climate	0.0189 (0.1830)	-0.0035 (0.1572)
Training	0.5623* (0.3012)	0.5357** (0.2309)
Organizational justice policy	-0.7383** (0.2799)	-0.7045*** (0.2324)
Indivi/organizational measure	0.0379 (0.0821)	0.0280 (0.0907)
Blau index	-. ^a	-0.1394 (0.2252)
Correlation	-0.2145 (0.1783)	-0.0493 (0.1535)
Entropy	-0.0054 (0.1246)	0.0380 (0.0953)
Publication bias	0.0262 (0.1188)	-0.0085 (0.1208)
Constant	0.0001 (0.1598)	-. ^a
No. of effect sizes	253	253
No. of studies	37	37
<i>F</i>	15.63***	
<i>R</i> ²	0.3661	
Wald χ^2		128.16***

Note: Robust standard errors in parentheses. Significant at *0.1, **0.05, ***0.01.

Abbreviations: CRVE, clustered robust variance estimation; GEE, generalized estimating equations.

^aCoefficients were omitted because of collinearity.

APPENDIX B: ROBUSTNESS CHECK FOR PERFORMANCE DIMENSIONS

TABLE B1 Robustness check with different performance measures

Moderator	CRVE	GEE
Dominance in physical presence	-0.2925*** (0.1003)	-0.2560** (0.1095)
Stereotype consensus	-0.1389 (0.0965)	-0.2133* (0.1273)
Leadership	0.8489*** (0.1857)	0.8590*** (0.1847)
Culture/Climate	-0.0193 (0.1368)	-0.0193 (0.1391)
Training	0.5101** (0.2219)	0.4596** (0.1859)
Organizational justice policy	-0.6754*** (0.2442)	-0.6337*** (0.2275)
Indivi/organizational measure	0.1040 (0.1153)	0.1153 (0.1266)
Efficiency	0.0160 (0.1183)	0.0661 (0.1165)
Effectiveness	0.0203 (0.1057)	-0.0094 (0.0935)
Representation	-0.1376 (0.1357)	-0.1892 (0.1550)
Equity	0.2044* (0.1162)	0.2420* (0.1254)
Publication bias	0.0151 (0.1179)	0.0162 (0.1427)
Constant	-0.1559 (0.2351)	-0.1422 (0.2367)
No. of effect sizes	253	253
No. of studies	37	37
<i>F</i>	24.41***	
<i>R</i> ²	0.3526	
Wald χ^2		177.47***

Note: Robust standard errors in parentheses. Significant at *0.1, **0.05, ***0.01.

Abbreviations: CRVE, clustered robust variance estimation; GEE, generalized estimating equations.