

Effectiveness of School Management Systems in Inclusive Education: A Meta-Analysis of Educational and Organizational Outcomes

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Abstract

This study aims to examine, through meta-analysis, the effectiveness of school management systems on educational and organizational outcomes in the context of inclusive education. In the study conducted in the Web of Science and Scopus databases in May 2026, 121 studies were identified, and after the inclusion/exclusion criteria were applied, 15 independent studies representing a total of 6,275 participants were included in the analysis. Pearson's correlation coefficient (r) was taken as the basis for calculating effect sizes; different statistical indicators were converted to r by standard formulas and synthesized using a random-effects model. Operationally, effect size was defined as Pearson's r, and all reported statistics (beta, t, and mean/standard deviation values) were converted to r using standard formulas, Fisher's z-transformed prior to synthesis, and interpreted using Cohen's (1988) benchmarks. The findings showed that school management systems had a statistically significant and medium-to-large effect on inclusive education outcomes. A high level of heterogeneity was observed across studies, which made it necessary to conduct moderator analyses. According to the results of the funnel plot and the trim-and-fill test, the risk of publication bias was found to be low. In the moderator analyses, only the type of measured outcome led to a significant differentiation in the overall effect size; stakeholder type was close to the boundary but remained below the significance threshold, whereas publication year and cultural context did not reveal a significant difference. In light of these findings, future research is recommended to deepen moderator analyses with a larger number of studies, to increase studies focusing particularly on special education and psychological/emotional outcome categories, and to examine inclusive school management practices comparatively across different cultural contexts.

Keywords: *School management systems, inclusive education, school management, educational outcomes, Meta-analysis.*

Introduction

The transformation of education systems into more inclusive, equitable, and accessible structures has been one of the research topics of education policies since the late twentieth century. Inclusive education is evaluated as a transformative social model that not only includes individuals with

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special needs in mainstream education but also encompasses the construction of institutional structures in which all students have equal learning opportunities and shapes school management, pedagogy, and institutional culture (Ainscow, 2020; Florian & Beaton, 2018). However, although international documents and national policies make this transformation obligatory, the barriers encountered in practice and the methodological limitations of the field show that transforming the ideal of inclusion into reality is a multidimensional problem (Haug, 2017; Nilholm, 2021).

The implementation of inclusive education environments requires the coordinated functioning of a broad stakeholder network extending from school administrators to teachers. While the roles of organizational capacity, leadership, and institutional culture variables in this process have been examined comprehensively, the function of systems that regulate data management and information flow has been researched relatively little (Gardiner, 2024; Tarman et al., 2026). School management information systems (SMIS) stand out as technological infrastructures that affect not only administrative processes but also strategic decision-making, monitoring, and pedagogical decision-making (Helal et al., 2021; Haleem et al., 2022); global crises such as COVID-19 have clearly demonstrated the critical role of these infrastructures in terms of institutional continuity (Ibrahim et al., 2020; Timotheou et al., 2023). Difficulties in inclusive practices are associated with teachers' attitudes and competencies at the individual level (Ewing et al., 2018) and with leadership and resource allocation at the organizational level (Khaleel et al., 2021). However, the effect of school management systems that provide the connection between these two levels has not been sufficiently revealed; existing studies have generally addressed these two variables separately (Esposito et al., 2019; Lambrecht et al., 2022) and have indicated the need to map the general field and eliminate this gap with empirical evidence (Sider et al., 2021).

The fact that research on inclusive education and school management in the literature mostly consists of qualitative and single-context studies has caused meta-analytic reviews that systematically synthesize findings to remain extremely limited, and this situation has restricted the capacity of the existing body of knowledge to guide policy and practice (Amka et al., 2026; Messiou, 2017). While evidence regarding the effect of school management systems on educational outcomes and organizational performance presents a scattered appearance across different disciplines (Schildkamp, 2019), findings indicating that data-based decision-making processes may increase institutional effectiveness also attract attention (Schildkamp et al., 2016).

The absence of a systematic synthesis of this relationship in the context of inclusive education makes the present study original and necessary. Accordingly, the aim of the study is to address the effect of school management systems on both individual learning outcomes and institutional-level variables from an integrated perspective and to eliminate this gap in the literature through meta-analytic evidence.

Together, these two frameworks offer a focused lens through which the present study's variables, including school management systems as the predictor and the range of educational/organizational outcomes as criteria, can be conceptualized. Integrating these two perspectives, the present study proposes a working synthesis in which school management systems function as the technological organizational mechanism (TOE) through which macro-level policy mandates for inclusion are translated into micro and meso-level outcomes (ecological systems theory); this synthesis directly informs the selection of the four moderator variables examined below (stakeholder type, outcome category, cultural context, publication year), each corresponding to a distinct layer or condition within this integrated model.

Specifically, stakeholder type reflects the microsystem level (direct, role-based experience of the system), cultural context reflects the macrosystem level (national values and policy environment), outcome category reflects the TOE framework's organizational dimension (the specific institutional processes and behaviors targeted by the technology), and publication year serves as a proxy for the TOE framework's environmental dimension (the shifting technological and policy landscape surrounding inclusive education over time). This integrated Technology–Ecology synthesis is used throughout the Discussion to interpret why each moderator does or does not differentiate the observed effect.

Novelty of the Study

The novelty of this study lies in three interrelated contributions. First, although school management systems and inclusive education have each been examined extensively, the relationship between these two variables has not been systematically synthesized through meta-analysis. Existing reviews have focused predominantly on teacher attitudes, leadership behaviors, or isolated case studies, leaving the aggregate effect of school management systems on inclusive education outcomes unquantified. Second, this study is the first to integrate the Technology–Organization–Environment (TOE) framework with Bronfenbrenner's ecological systems theory to conceptualize

school management systems as technological-organizational mechanisms that translate macro-level inclusion policies into micro- and meso-level outcomes. Third, the study introduces a five-category typology of educational and organizational outcomes (attitudinal, professional competence/behavioral, organizational/process-related, academic, and psychological/emotional) and empirically tests whether outcome type moderates the overall effect. This typology provides a novel analytical lens that moves beyond the one-dimensional treatment of "inclusive education outcomes" prevalent in the literature. Together, these contributions address a documented gap and offer an evidence-based foundation for future policy and practice.

School Management Systems and Technological Integration in Inclusive Education Processes

The positioning of school management systems as a functional infrastructure in inclusive education processes necessitates a multidimensional perspective that encompasses pedagogical and institutional transformation beyond managerial efficiency. The systematic monitoring and reporting of data such as student absenteeism, academic progress, individualized education plans, and access to support services are critically important for the sustainability of inclusive school environments (Mbawala et al., 2024). In this context, school management information systems are evaluated not only as an administrative tool but also as a strategic mechanism that makes decision-making processes information-based. Indeed, the rapid increase in data production and use in digitalizing educational environments also markedly increases the weight of these systems in the daily functioning of schools (Khanyile & Mpuangnan, 2024; Seitbatkalova et al., 2023). Considering that teachers and administrators need accurate and timely accessible information in order to develop effective inclusive practices, the role of management systems in providing this information flow becomes even more evident (Mariono & Sabar, 2023). All these developments clearly reveal the necessity of addressing the function of school management systems in inclusive education not merely as a technical issue but as a matter of institutional and pedagogical transformation.

Technological integration has the potential to support inclusive education practices; however, the realization of this potential depends on various organizational and pedagogical conditions. The effectiveness of digital technologies in schools is related not only to the existence of infrastructure but also to the meaningful integration of these technologies into learning-teaching processes

(Timotheou et al., 2023). Within this framework, the contribution of school management systems to inclusive practices varies significantly according to how these systems are used by teachers and administrators, which data are produced and analyzed, and how these analyses are reflected in decision-making processes (Schildkamp et al., 2016; Sibuyi et al., 2024). In situations where technology only digitizes existing practices, it is difficult to expect a transformative contribution to inclusion; therefore, the use of technological tools in harmony with a pedagogical vision emerges as a prerequisite (Haleem et al., 2022). Management information systems appear to assume a critical role, especially in monitoring the individualized needs of students with special needs and coordinating support mechanisms for these needs (Helal et al., 2021). Nevertheless, inequalities in access to digital infrastructure and differences in user competencies become apparent as structural problems that prevent technological integration from aligning with inclusive goals (Ibrahim et al., 2020).

It is worth noting, however, that the period between 2023 and 2026 has witnessed a rapid diffusion of artificial intelligence (AI) across educational settings, which has begun to reshape how school management systems function and how their effects might be conceptualized. Bibliometric evidence indicates that research on AI-enabled learning and management platforms has grown sharply since 2023, with such systems increasingly supporting adaptive, personalized, and self-regulated learning processes (Vergara et al., 2024). Within these platforms, learning analytics has emerged as a central mechanism through which AI translates large volumes of behavioral and performance data into actionable insights for teachers and administrators, supporting more timely and individualized pedagogical decisions (Ouyang & Zhang, 2024; Susnjak, 2023). At the administrative level, AI-supported management tools have also been shown to automate routine tasks such as scheduling, attendance monitoring, and reporting, thereby freeing school leaders to focus on strategic and pedagogical priorities (Hutami, 2024). More recently, AI-enabled intelligent assistants embedded in educational platforms have been developed to further personalize instructional support and adapt content delivery to individual learner needs (Sajja et al., 2024). Taken together, these developments suggest that the effectiveness of school management systems documented in earlier research may be substantially reconfigured by the integration of AI-driven analytics and automation, a dimension that warrants explicit attention when interpreting the present findings and when outlining directions for future research.

It is widely accepted in the literature that school leadership is a determining factor in the integration of school management systems into inclusive education processes. Inclusive school leadership is not limited to fulfilling legal requirements; it requires a vision that transforms institutional culture, strategically directs resources, and ensures the use of technological systems in alignment with pedagogical purposes (DeMatthews et al., 2021). Data-based decision-making approaches perform an important function in the concretization of this vision; school administrators' ability to make systematic evaluations through student profiles, absenteeism patterns, and academic progress data directly affects the effectiveness of inclusive practices (Schildkamp, 2019). Within the framework of distributed leadership models, the information provided by management systems is observed to be shared among teacher teams and support personnel and included in joint decision-making processes (Tejeiro, 2024). On the other hand, the limitation of leadership development programs in providing competence for the strategic use of school management systems appears as a structural gap that disrupts this integration (DeMatthews et al., 2020). Considering all these connections, it is of great importance to examine the effect of the relationship between school management systems and leadership capacity on inclusive education outcomes from an integrated perspective (Óskarsdóttir et al., 2020).

The Effectiveness of School Management Systems on Learning Experiences and Educational Outcomes

The effect of school management systems on students' learning experiences manifests itself as an indirect association shaped through organizational processes rather than as a direct causal relationship. The data-based monitoring capacity offered by these systems facilitates teachers' timely and appropriate design of individualized interventions for students with special needs (Schildkamp et al., 2017). Especially in schools where student progress data are analyzed regularly and systematically, inclusive practices are observed to follow a more consistent and sustainable course. In this context, the role of data teams in school improvement processes is directly associated with the effective use of management information systems and stands out as a determining factor in increasing institutional learning capacity (Schildkamp et al., 2016). The development of teachers' self-efficacy perceptions in inclusive classrooms also overlaps with this process; systematic information flow is evaluated as reinforcing professional confidence and improving the quality of teacher-student interactions (Chao et al., 2016). When all these

relationships are considered together, it is understood that the effect of school management systems on learning outcomes varies according to the quality of use and institutional context rather than the technical features of the system (Specht et al., 2016).

The evaluation of student outcomes in inclusive education is not limited only to academic achievement but also encompasses multidimensional indicators such as social participation, peer relationships, and sense of belonging to school. Monitoring the social participation patterns of students with special needs and regularly evaluating these students' positions in peer networks are accepted as critical indicators determining the quality of inclusive environments (Schwab et al., 2022). Although school management systems offer data collection and reporting capacity that can respond to this multidimensional evaluation need, the systematic use of this capacity for social and emotional outcomes has not yet been sufficiently developed. On the other hand, comprehensive review studies addressing the social participation of students with special needs in general education settings draw attention to the fact that the evidence base in this field is still strengthening (Wang et al., 2025). This multilayered nature of the outcome dimension of inclusive education necessitates evaluating the functionality of management systems beyond a narrow academic achievement perspective and brings to the forefront the question of how institutions use these systems and on what types of data they concentrate (Jury et al., 2023).

The Relationship of Digital School Management with Institutional Performance and Organizational Outcomes

The effects of digital school management systems on institutional performance are evaluated through multidimensional organizational indicators such as the quality of decision-making processes, the effectiveness of resource use, and stakeholder satisfaction. Studies examining the effect of school management information systems on parent satisfaction and institutional transparency reveal that these systems strengthen communication with stakeholders and increase institutional trust (Mariono & Sabar, 2023). Within this framework, it is understood that digital management infrastructures not only regulate internal processes but also reshape the school's relationship with its external environment. In addition, the fact that educational institutions have to work with an increasing amount of data in their decision-making processes in the age of big data requires the establishment of new standards in terms of the information capacity and user-friendly design of management systems (Forrester, 2019). In the context of inclusive education,

monitoring the effectiveness of services for students with special needs as a separate indicator in the evaluation of institutional performance makes expectations from management systems even more complex (DeMatthews & Mueller, 2022). When all these dimensions are considered together, it is evaluated that the relationship between digital school management and institutional performance displays a multivariable structure and that systematically examining this relationship will offer original contributions to the literature (Kwatubana & Mtimkulu, 2024).

When considered in terms of organizational outcomes, evidence that institutional change capacity is stronger in schools where a transformational leadership approach is integrated with digital management systems attracts attention. Studies evaluating the effect of transformational and instructional leadership practices on individualized education planning within the framework of inclusive education show that institutional effectiveness increases significantly at the points where leadership approaches intersect with the functionality of systems (Lambrecht et al., 2022). Studies compiling transformative evidence on inclusive leadership practices reveal in detail how school administrators shape institutional decisions through systematic data use and how this process affects organizational outcomes (Carrington et al., 2024). On the other hand, studies examining effective principal leadership in special education and inclusive schools show that successful school administrators use management information systems as a strategic decision-making tool and thereby ensure that resources for students are distributed more equitably (DeMatthews et al., 2020). In addition, studies addressing the relationship between principal preparation programs and inclusive leadership competencies emphasize that these programs do not sufficiently include the dimension of strategic use of digital management systems and point to an important gap in this field (DeMatthews et al., 2020). The systematic evaluation of organizational outcomes from an inclusive perspective has the potential to provide critical information for both policy development and school improvement practices (Navarro-Mateu et al., 2020).

Toward a Typology of Educational and Organizational Outcomes

A review of recent empirical work on school management and inclusive education suggests that outcomes cluster into five recurring categories. Attitudinal/belief outcomes capture stakeholders' perceptions and readiness toward inclusion (e.g., Aldosari, 2022, 2024). Professional competence and behavioral outcomes reflect changes in practice, innovative behavior, or self-efficacy (e.g., Bao et al., 2024; Farihen et al., 2026; Zhang et al., 2025). Organizational/process-related outcomes

address institutional functioning such as managerial processes and implementation climate (e.g., Küçükalkan et al., 2023; Moore et al., 2021). Academic outcomes concern direct measures of student achievement (e.g., Bettini et al., 2019), while psychological/emotional outcomes capture affective costs such as burnout (e.g., Küçükgöz, 2021). This five-part typology, synthesized from the included literature, provided the conceptual basis for the outcome-type moderator examined in this study (see Moderator Variables). This typology corresponds to the organizational dimension of the Technology–Ecology synthesis introduced above.

Typical Education Outcomes and Their Operationalization

In this meta-analysis, educational outcomes were operationally defined as measurable changes in student learning, participation, and achievement that result from inclusive education practices. Three typical education outcome categories were included: (a) academic outcomes, operationalized as standardized reading, mathematics, or overall achievement scores (e.g., Bettini et al., 2019); (b) attitudinal/belief outcomes, operationalized as stakeholders' perceptions, readiness, and attitudes toward inclusion measured through validated Likert-type scales (e.g., Aldosari, 2022, 2024); and (c) psychological/emotional outcomes, operationalized as affective states such as burnout, self-efficacy, or emotional exhaustion (e.g., Küçükgöz, 2021; Zhang et al., 2025). These outcomes affect the school management system significantly because they serve as feedback indicators that inform data-based decision-making, resource allocation, and individualized education planning. When management systems systematically collect and analyze these outcome data, they enable schools to monitor inclusive practices, identify gaps, and adjust instructional and organizational strategies accordingly. Conversely, the absence of such data flows limits the capacity of school management to respond to diverse learner needs.

Aim of the Study and Research Questions

This study aims to synthesize quantitative evidence on the relationship between school management systems and educational and organizational outcomes in the context of inclusive education through meta-analysis. To formulate a clear and specific research question, the scope of the meta-analysis was structured according to the PICO framework. The population (P) comprised teachers, school administrators, students, and parents involved in inclusive education contexts. The intervention/exposure (I) was defined as school management, leadership, or administrative support practices and systems. The comparison (C) consisted of the comparison conditions reported in the

primary studies, where applicable. The outcomes (O) comprised educational and organizational outcomes, including attitudinal, professional, organizational, academic, and psychological outcomes. Based on this framework, the following research questions were formulated:

1. What is the overall effect of school management systems, leadership, and administrative support practices on educational and organizational outcomes in inclusive education contexts?
2. Does stakeholder type (teacher, administrator, student, or mixed groups) moderate the effect of school management systems on inclusive education outcomes?
3. Does outcome type (attitudinal, professional, organizational, academic, or psychological) moderate the magnitude of the effect of school management systems on inclusive education outcomes?
4. Does cultural context (vertical collectivist, horizontal individualist, or mixed) moderate the effect of school management systems on inclusive education outcomes?
5. Does publication-year period moderate the magnitude of the observed effect of school management systems on inclusive education outcomes?

Method

Research Model

In this study, the meta-analysis method, which aims to combine the quantitative findings of independently conducted studies within a common statistical framework, was adopted. Meta-analysis is a systematic technique that enables a general judgment about the literature to be reached by synthesizing effect sizes obtained from studies with different sample sizes, measurement tools, and research contexts (Borenstein et al., 2009; Card, 2012). The main reason for selecting this method is that studies addressing the effect of school management systems in the context of inclusive education show marked diversity in terms of sample groups, cultural contexts, and types of measured outcomes. A holistic evaluation of such a scattered literature can be possible only through quantitative synthesis techniques (Lipsey & Wilson, 2001).

Literature Search Process and Inclusion/Exclusion Criteria

The Web of Science (WoS) and Scopus databases were searched to identify studies suitable for the meta-analysis. The search was conducted in May 2026. The keyword combinations for the Scopus database included the following terms.

TITLE-ABS-KEY(("inclusive education" OR inclusion OR "inclusive school" OR mainstream* OR "special education" OR "special educational need*" OR SEN OR disability) AND ("school management" OR "school management system*" OR "school leadership" OR principal* OR "educational leadership" OR "school administration" OR "school governance" OR "instructional leadership" OR "distributed leadership") AND (effect* OR outcome* OR achievement OR performance OR implementation OR success OR impact))*

For the WoS database, it was constructed to include the following terms: TS=((("inclusive education" OR inclusion OR "inclusive school*" OR mainstream* OR "special education" OR "special educational need*" OR SEN OR disability) AND ("school management" OR "school management system*" OR "school leadership" OR principal* OR "educational leadership" OR "school administration" OR "school governance" OR "instructional leadership" OR "distributed leadership") AND (effect* OR outcome* OR achievement OR performance OR implementation OR success OR impact)).

In terms of publication year, studies after 2006 were included in the analysis (the last 20 years). As a result of the initial search, a total of 121 studies were identified from both databases; 36 studies with database overlap were eliminated and the remaining studies were subjected to abstract screening. After abstract screening, 48 studies that were qualitative or review studies were excluded. Of the remaining 37 studies, 15 independent studies that had sufficient statistical information enabling effect size calculation (correlation coefficient, standardized beta value, R2 value, or group means) were included in the analysis. The inclusion criteria were determined as follows:

- i. Quantitative studies examining the relationship of school management, leadership, or administrative support practices with an outcome in the context of inclusive education,
- ii. Studies reporting statistical values (r , β , t , or mean/standard deviation) that allow effect size calculation,

- iii. Studies including at least one of teacher, administrator, student, or parent samples.

The exclusion criteria were as follows:

- iv. Entirely qualitative studies that did not present quantitative data,
- v. Studies that did not examine a direct relationship between school management and inclusive education outcomes,
- vi. Publications that did not provide sufficient statistical detail for effect size calculation.

Coding Process

The studies were coded in six basic dimensions: author and publication year, country and cultural context in which the study was conducted, sample type and size, measured outcome category, and the statistical indicator used in calculating the effect size. The coding process was carried out by the researcher alone, and the coding table was reviewed again in two different sessions to ensure consistency.

Statistical Procedures

Pearson's correlation coefficient (r) was adopted as the primary criterion in calculating effect sizes. Findings reported as beta, t value, or group means were converted to the r effect size using standard conversion formulas (Peterson & Brown, 2005; Lipsey & Wilson, 2001), and then the values were subjected to Fisher's z transformation. Several assumptions underlie these conversion procedures and should be made explicit. The conversion of standardized beta coefficients to r followed Peterson and Brown's (2005) approach, which treats β as a reasonable approximation of r primarily when the regression model includes a single predictor or when multicollinearity among predictors is negligible; under these conditions, β and r converge, whereas in multivariate models with substantial shared variance among predictors, β can under- or overestimate the corresponding zero-order correlation. Following Peterson and Brown's (2005) recommendation, this approximation was applied only to beta coefficients falling within the $\pm.50$ range, beyond which the correspondence between β and r becomes less reliable. For findings reported as t values, the conversion to r assumed that the reported t statistic derived from a two-group comparison or a single-predictor regression with known degrees of freedom, consistent with the formulas provided by Lipsey and Wilson (2001); this procedure further assumes homogeneity of variance between

compared groups. For studies reporting means and standard deviations, values were first converted to Cohen's *d* and subsequently transformed to *r*, an approach that assumes approximately normal score distributions and comparable variances across groups (Lipsey & Wilson, 2001). Because these conversions rest on differing sets of assumptions, the resulting *r* values are treated as approximations of the true population correlation rather than as directly equivalent statistics, and this heterogeneity in effect-size derivation was taken into account when interpreting the between-study variance captured by the random-effects model.

Because real differences in effect sizes across studies were considered possible, the random-effects model was preferred (Borenstein et al., 2009). Between-study variance (τ^2) was estimated using the DerSimonian and Laird (1986) method. The overall effect size was calculated using the inverse-variance weighting technique based on sample size, and the obtained *z* value was converted back to *r* for interpretability. Cohen's (1988) criteria were used in interpreting effect sizes; accordingly, *r* = .10 indicates a small effect, *r* = .30 a medium effect, and *r* = .50 and above a large effect.

In this study, the effect size was operationally defined as the Pearson product-moment correlation coefficient (*r*), which quantifies both the strength and direction of the relationship between school management systems (predictor) and educational/organizational outcomes (criterion). Operationally, *r* was selected because it is scale-free, comparable across studies with different measurement instruments, and directly interpretable in terms of explained variance (*r*²). For studies reporting standardized beta coefficients, conversion to *r* followed Peterson and Brown's (2005) formula, applied only to beta values within $\pm .50$; beyond this range, the beta–*r* correspondence becomes unreliable. For studies reporting *t* values, conversion assumed a two-group comparison or single-predictor regression with known degrees of freedom (Lipsey & Wilson, 2001), assuming homogeneity of variance. For studies reporting means and standard deviations, values were first converted to Cohen's *d* and then transformed to *r*, assuming approximately normal distributions and comparable variances. All *r* values were Fisher's *z*-transformed prior to synthesis and back-transformed for interpretation. Effect sizes were interpreted using Cohen's (1988) benchmarks: *r* = .10 (small), *r* = .30 (medium), and *r* = .50 and above (large). This operational definition ensures that the effect size reflects not merely statistical significance but the practical magnitude of the relationship in real-world inclusive education settings.

Moderator Variables

Subgroup comparisons were conducted on the basis of the Q statistic developed by Hedges and Olkin (1985). The total heterogeneity statistic (Q) was decomposed into the Q_b component reflecting between-group variance; a statistically significant Q_b value ($p < .05$) was interpreted as indicating that the relevant moderator was associated with differentiation in the overall effect size. Four moderator variables were examined in this study. These were stakeholder type (teacher, administrator, student, special education teacher, mixed stakeholder groups), measured outcome category (attitudinal, professional competence/behavioral, organizational/process-related, academic, psychological), publication-year period, and the cultural context in which the study was conducted. Cultural context classification was addressed in three categories, based on Hofstede's (2001) individualism-collectivism and power distance dimensions: vertical collectivist (Saudi Arabia, China, Türkiye, Oman, Ghana, South Korea), horizontal individualist (USA, Germany), and mixed (multinational samples).

The inclusion of these four variables as moderators was theoretically motivated. Stakeholder type was examined because different groups within a school community occupy distinct structural positions, and stakeholder theory suggests that the perceived effects of an organizational practice are likely to vary depending on whose perspective is being assessed (Freeman, 1984). Outcome category was treated as a moderator because school management systems may influence conceptually distinct domains through different mechanisms, and collapsing heterogeneous outcome types risks masking domain-specific effects, a concern well documented in the moderator-analysis literature (Kraemer et al., 2002). The publication-year period was included because the technological capacities and policy conceptions of inclusive education have evolved considerably over the study timeframe, and testing for time-based variation is standard practice for detecting whether effect sizes are conditioned by such contextual shifts (Borenstein et al., 2009). Finally, cultural context was retained as a moderator because collectivist and individualist orientations, as reflected in Hofstede's (2001) framework and further elaborated through the horizontal–vertical distinction (Singelis et al., 1995), are associated with different patterns of authority, resource allocation, and decision-making that may shape how management systems are implemented and perceived within schools.

Evaluation of Publication Bias

The relatively low probability of publication for studies containing weak or statistically nonsignificant findings is considered a source of bias that may cause meta-analytic estimates to be higher than the true effect (Rothstein, Sutton, & Borenstein, 2005). In this study, to test this risk, first the funnel plot was examined, and then Duval and Tweedie's (2000) trim-and-fill method was applied to compare observed and adjusted effect sizes.

Findings

Characteristics of the Included Studies

A total of 15 independent studies representing 6,275 participants were included in the meta-analysis. A substantial portion of the studies was obtained from Asian and Middle Eastern countries (China, Saudi Arabia, Türkiye, Oman, South Korea), while the remaining studies originated from North America (USA), Europe (Germany), and Africa (Ghana). When examined in terms of cultural context, it is seen that the majority of the studies (73.3%) were conducted in vertical collectivist cultures, three (20.0%) in horizontal individualist cultures, and one (6.7%) in a multinational/mixed sample. Sample types extend across a broad range from teachers to school administrators, from students to multiple stakeholder groups. The descriptive characteristics of the included studies are presented in Table 1.

Table 1

Descriptive Characteristics of the Studies Included in the Meta-Analysis

Author (Year)	Country	Cultural Context	Sample Type	N	Outcome Type
Aldhilan et al. (2025)	Saudi Arabia	Vertical Collectivist	Teacher/Administrator/Parent	550	Attitude
Aldosari (2024)	Saudi Arabia	Vertical Collectivist	School Principals	403	Attitude
Aldosari (2022)	Saudi Arabia	Vertical Collectivist	Middle School Teachers	613	Attitude
Bao et al. (2024)	China	Vertical Collectivist	Primary/Secondary School Teachers	358	Innovative Behavior
Bettini et al. (2019)	USA	Horizontal Individualist	Kindergarten Students	1722	Reading Achievement
Emam et al. (2026)	Oman	Vertical Collectivist	Teacher/Student	143	School Climate

Author (Year)	Country	Cultural Context	Sample Type	N	Outcome Type
Feng et al. (2025)	China	Vertical Collectivist	Special Education Teachers	751	Inclusive Competence
Kandemir (2024)	Türkiye	Vertical Collectivist	Teachers	410	School Effectiveness
Kuyini& Desai (2007)	Ghana	Vertical Collectivist	Principal/Teacher	108	Teaching Practice
Küçükalkan et al. (2023)	Multinational (N. Cyprus/TR/Eng.)	Mixed	Administrator/Teacher	175	Managerial Process
Küçükgöz (2021)	Türkiye	Vertical Collectivist	Special Education Teachers	192	Burnout
Lambrech et al. (2022)	Germany	Horizontal Individualist	School Leaders	135	IEP Implementation
Moore et al. (2021)	USA	Horizontal Individualist	School Leaders	34	Implementation Climate
Zhang et al. (2025)	China	Vertical Collectivist	Teachers	459	Self-Efficacy
Kim (2016)	South Korea	Vertical Collectivist	Primary School Teachers	222	Role Behaviors

N = sample size.

The effect sizes obtained from the studies and their relative weights in the overall synthesis are reported in Table 2. In the weighting procedure, both sample size and between-study variance (τ^2) were taken into account within the framework of the random-effects model.

Table 2

Study-Level Effect Sizes and Contribution Weights to the Analysis

Author (Year)	r	95% CI	Weight (%)
Aldhilan et al. (2025)	0.431	[0.360, 0.497]	6.9
Aldosari (2024)	0.280	[0.187, 0.368]	6.8
Aldosari (2022)	0.169	[0.091, 0.245]	6.9
Bao et al. (2024)	0.385	[0.293, 0.470]	6.8
Bettini et al. (2019)	0.600	[0.569, 0.629]	7.0
Emam et al. (2026)	0.470	[0.331, 0.589]	6.6
Feng et al. (2025)	0.300	[0.233, 0.364]	6.9
Kandemir (2024)	0.474	[0.395, 0.546]	6.9

Author (Year)	r	95% CI	Weight (%)
Kuyini& Desai (2007)	0.260	[0.075, 0.428]	6.4
Küçükalkan et al. (2023)	0.600	[0.496, 0.687]	6.6
Küçükgöz (2021)	-0.438	[-0.546, -0.316]	6.7
Lambrecht et al. (2022)	0.301	[0.139, 0.447]	6.5
Moore et al. (2021)	0.640	[0.385, 0.804]	5.3
Zhang et al. (2025)	0.795	[0.759, 0.826]	6.9
Kim (2016)	0.740	[0.674, 0.794]	6.7

r = Pearson correlation effect size; *CI* = confidence interval.

Appendix 1 presents the forest plot of individual study effect sizes alongside the pooled random-effects estimate. The wide dispersion of point estimates, ranging from $r = -.438$ (Küçükgöz, 2021) to $r = .795$ (Zhang et al., 2025), visually corroborates the high heterogeneity statistic reported above ($I^2 = 97.6\%$) and illustrates why subgroup moderator analyses were necessary to explain this variability

Overall Effect Size Findings

The meta-analysis of the 15 independent studies showed a statistically significant positive overall effect of school management systems, leadership, and administrative support practices on educational and organizational outcomes in inclusive education. The pooled effect size was moderate in magnitude ($r = .431$, 95% CI [.285, .556], $z = 5.40$, $p < .001$). This finding indicates that stronger school management, leadership, and administrative support are generally associated with more favorable outcomes in inclusive education. However, substantial heterogeneity was observed across the included studies ($Q(14) = 576.53$, $p < .001$; $I^2 = 97.6\%$), suggesting that the magnitude of the effect varies considerably across studies and may depend on contextual or study-level characteristics. Accordingly, moderator analyses were conducted to examine whether stakeholder type, outcome type, cultural context, and publication-year period could account for differences in effect sizes.

Publication Bias Findings

When the funnel plot presented in Figure 1 is examined, it is understood that the studies display a relatively symmetrical distribution around the overall effect size and that no clear asymmetry pattern is observed. As a result of Duval and Tweedie's trim-and-fill test, which was applied to

confirm this observation, no difference requiring the trimming of any study was identified between the observed effect size and the adjusted value (Table 3). This result indicates that publication bias in the current dataset did not substantially distort the overall findings.

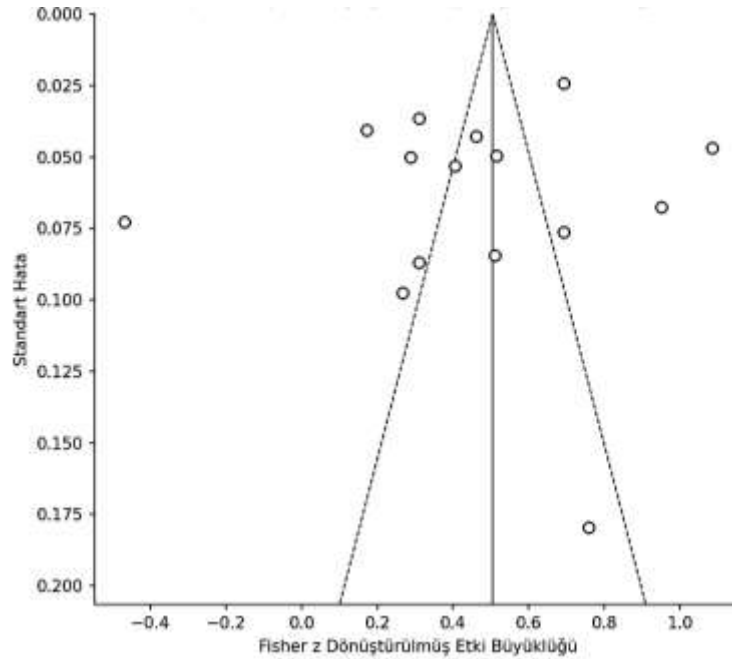


Figure 1. Funnel Plot of Effect Size for Publication Bias

Table 3

Duval and Tweedie Trim-and-Fill Test Results

	k	r	Lower Bound	Upper Bound
Observed Values	15	.431	.285	.556
Adjusted Values (Trim-and-Fill)	15 (not trimmed)	.431	.285	.556

Moderator Analyses

When the second research question concerning the moderator role of stakeholder type was examined, the between-groups Q value ($Q_b = 7.94$, $df = 4$, $p = .094$) was found to remain below the conventional significance threshold, but to display a borderline value. At the descriptive level,

it was determined that samples consisting of general and subject-area teachers produced the highest effect size ($r = .590$), followed by samples consisting of kindergarten/primary school students ($r = .540$) and multiple stakeholder groups ($r = .519$). In contrast, it is noteworthy that the effect size remained near negative and nonsignificant in samples consisting of special education teachers ($r = -.073$).

The analysis conducted within the scope of the third research question concerning the type of measured outcome revealed a statistically significant differentiation ($Q_b = 10.46$, $df = 4$, $p = .033$). Organizational and process-related outcomes ($r = .545$) and professional competence and behavioral outcomes ($r = .507$) were the categories in which the strongest effects were observed, while student academic outcomes also displayed a high-level effect ($r = .600$). The effect size in attitudinal/belief outcomes remained at a medium level ($r = .297$) and the confidence interval included zero; in the psychological/emotional outcome category, the negative finding obtained from a single study ($r = -.438$) shows that the relationship in question differs markedly in direction and magnitude according to outcome type.

The analysis conducted within the scope of the fourth research question concerning cultural context showed that there was no statistically significant difference between vertical collectivist ($r = .388$) and horizontal individualist ($r = .522$) cultures ($Q_b = 1.12$, $df = 2$, $p = .571$). This finding is an indicator that the effect of school management systems on inclusive education displays a relatively consistent pattern beyond cultural boundaries. Nevertheless, the fact that the point estimate observed in horizontal individualist cultures is somewhat higher should not be ignored.

The moderator analysis conducted in the context of the fifth research question concerning publication year did not reveal a significant difference ($Q_b = 1.96$, $df = 3$, $p = .580$). Studies published in the earliest period (2007-2016) displayed a relatively high effect size ($r = .548$), this value decreased relatively in the 2017-2021 period ($r = .294$), and in subsequent periods it tended to increase again (2022-2024: $r = .377$; 2025-2026: $r = .531$). This fluctuating pattern shows that the effect did not display a linear increase or decrease over the years, but rather had fluctuations arising from period-specific sample characteristics.

Table 4*Moderator Analysis Results*

Variable	k	N	r	Lower	Upper	Qb
Inclusive School Management Practices (Overall)	15	6.275	.431*	.285	.556	—
Moderator [Stakeholder Type]						7.94
General/Subject-Area Teachers	4	1.704	.590*	.344	.761	
Multiple Stakeholders (Mixed)	2	725	.519*	.120	.774	
Kindergarten/Primary School Students	2	1.865	.540*	.149	.785	
School Administrators/Leaders	4	680	.370*	.055	.618	
Special Education Teachers	2	943	-.073	-.482	.363	
Moderator [Outcome Type]						10.46*
Organizational/Process-Related Outcomes	4	762	.545*	.273	.737	
Professional Competence/Behavior	6	2.033	.507*	.287	.676	
Student Academic Outcomes	1	1.722	.600*	.060	.868	
Attitude/Belief	3	1.566	.297	-.061	.588	
Psychological/Emotional Outcomes	1	192	-.438	-.806	.175	
Moderator [Publication Year]						1.96
2007–2016	2	330	.548*	.154	.792	
2017–2021	3	1.948	.294	-.080	.596	
2022–2024	6	2.094	.377*	.133	.577	
2025–2026	4	1.903	.531*	.265	.722	
Moderator [Cultural Context]						1.12
Vertical Collectivist	11	4.209	.388*	.213	.540	
Horizontal Individualist	3	1.891	.522*	.192	.746	
Mixed	1	175	.600*	.045	.872	

* $p < .05$. k = number of studies; N = total sample size; r = weighted mean effect size; Qb = between-groups heterogeneity statistic. Effect sizes are reported as Pearson's r ; all values were Fisher's z -transformed prior to synthesis.

It can be stated that the obtained findings show that school management systems create a medium-to-large and statistically significant effect on educational and organizational outcomes in the context of inclusive education ($r = .431$). Among the moderator analyses, only the type of measured outcome was determined to be associated with significant differentiation among groups;

stakeholder type was close to the boundary but remained below the significance threshold, while publication year and cultural context did not statistically significantly differentiate the overall effect size.

Discussion and Conclusion

In this study, the effectiveness of school management systems on educational and organizational outcomes in the context of inclusive education was revealed through the meta-analysis method. In the study, findings obtained from fifteen independent studies were synthesized within the framework of a random-effects model. The relevance of this inquiry is heightened by developments that have unfolded since 2020. The COVID-19 pandemic functioned as an external shock that compelled schools worldwide to rapidly adopt and depend on digital management infrastructures for continuity of instruction, administrative coordination, and monitoring of vulnerable student populations, including those receiving inclusive education services (Ibrahim et al., 2020; Timotheou et al., 2023). This abrupt, large-scale adoption means that school management systems are no longer peripheral administrative tools but have become embedded features of everyday school operation. Consequently, understanding whether and how these systems translate into measurable inclusive education outcomes is no longer a marginal academic question but a pressing practical one, directly motivating the present study's purpose and its selection of educational and organizational outcomes as the core variables of interest. To interpret these findings coherently rather than as a loosely connected set of empirical observations, the present study draws on two complementary theoretical perspectives. First, the Technology–Organization–Environment (TOE) framework (Tornatzky & Fleischer, 1990) is used to conceptualize school management systems as technological innovations whose adoption and effectiveness are jointly shaped by organizational readiness (e.g., leadership capacity, institutional culture) and environmental pressures (e.g., the pandemic-driven urgency described above, policy mandates for inclusion). Bronfenbrenner's (1979) ecological systems theory is used to situate inclusive education outcomes within nested levels of influence from the individual student and classroom (microsystem) to the school as an organization (mesosystem) and broader cultural and policy context (macrosystem), providing a rationale for why moderators such as stakeholder type, outcome category, and cultural context might differentiate the observed effect. Together, these two

frameworks offer a focused lens through which the moderator findings discussed below can be interpreted, rather than treating each result as an isolated empirical pattern.

The meta-analysis results reveal that school management systems involved in inclusive education practices create a significant and medium-to-large effect on educational and organizational outcomes. This finding shows that school management systems should be evaluated as a functional mechanism that shapes the quality of inclusive practices beyond being merely an administrative tool. This result overlaps with views in the literature emphasizing the contribution of data-based decision-making processes to school improvement (Schildkamp, 2019). Indeed, arguments that the strategic use of management information systems may increase institutional effectiveness are supported by the findings of this study (Schildkamp et al., 2016). However, the high heterogeneity rate observed among the studies indicates that the effect is not universal and uniform, but rather differs substantially according to contextual conditions. Accordingly, this pooled effect size should be understood as a summary estimate rather than evidence of a uniform relationship across studies; the substantial heterogeneity reported here ($I^2 = 97.6\%$) was the explicit motivation for conducting the four moderator analyses addressing RQ2 through RQ5, which serve as the primary mechanism through which this study identifies where the included studies converge and where they diverge. This situation is consistent with approaches suggesting that the effect of school management systems depends more on the mode of use than on the technical features of the system (Timotheou et al., 2023). This high variability also confirms the view, frequently expressed in the literature, that contextual and institutional differences shape the results of inclusive practices (Haug, 2017). Therefore, this finding once again reveals that the role of school management systems on inclusive education outcomes should be addressed not only through the existence of the system but also together with institutional usage practices.

Read through the stakeholder-theory component of the framework established above, the differentiated pattern observed across stakeholder groups is consistent with the expectation that an organizational practice will be perceived and experienced differently depending on each group's structural position within the school system (Freeman, 1984); this is particularly evident in the divergence between general teachers and special education teachers discussed below. Findings regarding the moderator function of stakeholder type show that teacher samples and multiple stakeholder groups display relatively high effect sizes, whereas the effect remains nonsignificant

in samples consisting of special education teachers. The fact that the between-group difference remains below the statistical significance threshold but displays a borderline value indicates that stakeholder type has a tendency that may partially differentiate the effect, but that this tendency is not strong enough to reach a definitive judgment. This finding offers an important inference; because it can be considered that special education teachers are affected differently by school management systems compared with other stakeholders or that these systems do not adequately meet their professional needs. This pattern parallels the literature drawing attention to burnout and perceptions of professional burden experienced by special education teachers in inclusive classrooms (Ewing et al., 2018). This near-zero and nonsignificant effect is also consistent with the broader literature on special education teacher attrition and retention, which identifies inadequate administrative support rather than support per se as a persistent source of dissatisfaction among special educators, even when formal management structures are in place (Billingsley & Bettini, 2019). One plausible explanation is that school management systems, as currently designed and implemented, may not adequately capture or respond to the distinctive caseload, documentation, and individualized-planning demands that characterize special education practice, so that the presence of such a system does not translate into a perceptible benefit for this stakeholder group. This interpretation suggests that the null effect observed here should not be read as evidence that management systems are irrelevant to special educators, but rather as an indication that generic system-level implementations may be misaligned with their specific professional needs. On the other hand, the strong effect observed among teachers in general is consistent with studies suggesting that teachers improve their self-efficacy perceptions by benefiting from data-based information flow (Chao et al., 2016). This result also supports views arguing that school leadership should develop differentiated support mechanisms for different stakeholder groups (DeMatthews et al., 2021). Consequently, the boundary-level moderator effect of stakeholder type is evaluated as a finding indicating that this relationship should be retested with larger samples in the future.

From the standpoint of the TOE framework, the significant differentiation by outcome type is consistent with the view that technological-organizational effectiveness is not a unitary construct but manifests unevenly across the specific processes and behaviors it is applied to a pattern the present typology of outcomes (see Theoretical Framework) was explicitly designed to capture. Findings regarding the moderator role of measured outcome type constitute the result of the study

that reveals the most distinct differentiation. It was determined that organizational and process-related outcomes and professional competence and behavioral outcomes displayed the strongest effects, whereas the effect remained relatively weak or uncertain in attitudinal and psychological outcomes. This finding is important in showing that school management systems have a stronger effect on concrete, observable, and process-oriented outcomes, whereas a similar effect on internal and emotional-level variables cannot be guaranteed. This differentiation is consistent with approaches emphasizing that the effect of digital management systems depends not only on the existence of infrastructure but also on the processes into which these systems are integrated (Haleem et al., 2022).

The strong effect in organizational outcomes also supports studies highlighting the contribution of management information systems to decision-making and institutional transparency (Mariono & Sabar, 2023). The weak effect in attitudinal and psychological outcomes, on the other hand, is interpreted as a result overlapping with review studies stating that teacher attitudes display a multidimensional and complex structure (Ewing et al., 2018). The negative effect size observed in the psychological/emotional outcome category warrants closer examination, as it rests entirely on a single study (Küçüköz, 2021) and should therefore be interpreted with particular caution rather than treated as a generalizable pattern. It is also worth noting that this negative coefficient does not necessarily indicate a detrimental effect of school management practices: because the outcome variable in this study was teacher burnout an inherently undesirable construct a negative association between administrative/leadership engagement and burnout scores in fact reflects a favorable relationship, consistent with the broader burnout literature linking supportive leadership to reduced emotional exhaustion (Maslach et al., 2001). Moreover, this single study is the same source that produced the near-zero effect observed for special education teachers as a stakeholder group; consequently, the two "negative" findings discussed above are not independent corroborating results but two moderator-level reflections of the same underlying data point. This overlap further limits the extent to which either finding can be generalized, and it underscores a broader measurement concern: the construct assessed in this study—principals' paternalistic leadership style is conceptually narrower than the information-management and administrative-infrastructure constructs captured in most of the other included studies, raising the possibility that this case reflects construct heterogeneity within the outcome-type category rather than a genuine psychological cost of school management systems for special education teachers. Future meta-

analyses with a larger number of psychological-outcome studies are needed to determine whether this pattern replicates or was an artifact of a single, conceptually distinct study. When this finding is evaluated as a whole, it is understood that the contribution of school management systems to inclusive education occurs selectively according to outcome type and that this selectivity should be taken into account in future intervention designs.

Viewed through the ecological systems lens established above, the absence of a significant cultural-context effect suggests that the macrosystem (national culture) exerts less influence on this relationship than the mesosystem (institutional practice) a pattern consistent with the TOE framework's emphasis on organizational readiness over environmental context as the primary driver of technology effectiveness. Findings regarding the moderator role of cultural context show that there is no statistically significant difference between vertical collectivist and horizontal individualist cultures. This result is noteworthy in that it indicates that the effect of school management systems on inclusive education displays a relatively consistent pattern beyond cultural boundaries. This finding carries an important inference; because this situation suggests that the functionality of management systems may have a universal quality and may be implemented with similar strategies in different cultural contexts. This result overlaps with international policy approaches suggesting that inclusive education is addressed similarly in different countries as a legal and social obligation (Ainscow, 2020). On the other hand, the somewhat higher point estimate observed in horizontal individualist cultures can be partially associated with studies suggesting that leadership and organizational culture differences may partially shape the effect (Óskarsdóttir et al., 2020). Nevertheless, the imbalanced distribution of the number of samples across cultural groups requires this finding to be interpreted cautiously. Consequently, the fact that cultural context does not create significant differentiation strengthens the interpretation that the contribution of school management systems to inclusive education outcomes depends on institutional mode of practice rather than cultural specificity.

Within the TOE framework, publication year functions as a proxy for shifts in the technological and environmental context surrounding school management systems; the absence of a linear trend therefore suggests that environmental pressures (e.g., policy mandates, crisis-driven adoption) have shaped effectiveness episodically rather than through a steady technological maturation process. Findings concerning publication-year periods show that the observed effect does not display a linear increase or decrease over time, but rather follows a fluctuating pattern. A relatively

high effect was observed in the earliest period, this effect decreased in the following period, and in subsequent periods it tended to increase again. This finding is important in showing that the effect of school management systems on inclusive education exhibits fluctuations arising from period-specific sample characteristics rather than from a temporal maturation process. This pattern is consistent with views suggesting that the role of digital technologies in education expands not linearly but intermittently depending on technological and political developments (Haleem et al., 2022). In addition, studies drawing attention to the sudden increase in the importance of digital management infrastructures caused by global crises also offer a framework that can explain why the effect displays periodic fluctuations (Ibrahim et al., 2020). Nevertheless, the fact that the publication-year moderator is not significant also suggests that methodological developments in the literature have not systematically changed the effect size. When this finding is evaluated as a whole, it is concluded that the contribution of school management systems to inclusive education is shaped by context-specific conditions in each period rather than by a time-dependent trend.

The research findings offer important implications from both theoretical and practical perspectives. At the theoretical level, the inclusion of school management systems in the inclusive education literature expands discussions in this field that had previously been conducted predominantly around teacher attitudes and leadership behaviors (Esposito et al., 2019). The identification of outcome type as a significant moderator shows that inclusive education effectiveness should be theorized not as a one-dimensional structure but as a multilayered phenomenon. At the practice level, the findings indicate that school administrators should position management information systems not only as administrative record-keeping tools but also as strategic mechanisms that support inclusive practices. Accordingly, it is important that school leadership development programs include competencies for the strategic use of management systems more comprehensively (DeMatthews et al., 2020). Findings concerning special education teachers reveal that support mechanisms for this stakeholder group should be reconsidered. As a result, this study provides a strong evidence base indicating that the contribution of school management systems to inclusive education practices should be addressed from an integrated perspective at both policy and practice levels.

This study has some limitations. First, the limited number of studies included in the meta-analysis caused some subgroups in the moderator analyses to be represented by small samples. This

situation requires that the results obtained, especially in subgroups based on a single study, such as the psychological outcome category, be interpreted cautiously. In addition, the fact that the vast majority of the included studies were conducted in a cross-sectional design limits the interpretation of effect sizes as indicating a causal relationship. The imbalanced distribution of cultural context categories also emerges as another limitation that weakens the statistical power of cross-cultural comparisons. The fact that the coding process was carried out by a single researcher meant that inter-coder reliability could not be assessed. All these limitations show that the generalizability of the findings should be evaluated carefully.

The operational definition of effect size as r , while facilitating cross-study comparison, may not capture non-linear relationships between school management systems and inclusive education outcomes, nor does it fully account for the differential assumptions underlying the conversion of beta, t , and mean/standard deviation values into a common correlational metric. Because these conversions rest on differing assumptions (e.g., single-predictor models for beta, homogeneity of variance for t , and normality for mean differences), the resulting r values should be treated as approximations of the true population correlation rather than as strictly equivalent statistics. Additionally, the use of a single effect-size metric may obscure domain-specific nuances that alternative indices (e.g., Cohen's d , odds ratios) could reveal.

Conclusion & Recommendations

This study revealed that school management systems have a significant and medium-to-large effect on educational and organizational outcomes in the context of inclusive education and addressed this relationship for the first time through a systematic meta-analytic synthesis. The study adds a technological and organizational dimension to discussions in the inclusive education literature that have primarily been conducted around teacher attitudes and leadership behaviors. The identification of outcome type as a significant moderator fills an important methodological gap by showing that findings in the literature differ systematically according to outcome type. Findings regarding stakeholder type, cultural context, and publication year indicate that this relationship displays universal consistency in some dimensions and requires further research in others. Thus, this study eliminates an important gap in the literature by evaluating the relationship between school management systems and inclusive education outcomes within an integrated framework

based on empirical evidence. The obtained findings provide an evidence-based ground for future policy and practice studies.

Several recommendations have been developed for future research. First, repeating this meta-analysis at a time when a larger number of primary studies has accumulated is recommended in order to increase the statistical power of moderator analyses. The research can be expanded by searching a broader publication-year range with different indexes. In addition, conducting longitudinal-design studies may contribute to revealing the temporal course of the relationship between school management systems and inclusive education outcomes more reliably. Mixed-method studies supported by qualitative research methods are also recommended in order to understand in depth the findings concerning special education teachers. Retesting the cultural context variable with more balanced samples is evaluated as an orientation that will strengthen the evidence base in this field. For practitioners, designing professional development programs that support the integration of school management systems into inclusive practices is recommended.

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Appendix

Appendix 1. Forest Plot

