

PRISMA 2020 Checklist - Completed

Manuscript: Explainable Artificial Intelligence in Financial Fraud Detection: A Systematic Review and FinTech-Oriented ADO–TCCM Meta-Framework for Trust, Governance, and Transparency

Authors: Devansh Gupta, Priyanka Chugh, Kiran Sood, Simon Grima

Journal: FinTech (MDPI) | Manuscript ID: fintech-4297242

Section and Topic	Item #	Checklist item	Location in Manuscript
TITLE			
Title	1	Identify the report as a systematic review.	Title page: The title explicitly states 'A Systematic Review and FinTech-Oriented ADO–TCCM Meta-Framework...' — this identifies the report as a systematic review.
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Abstract (p.1): The abstract describes the systematic review of 99 Scopus-indexed articles, the PRISMA 2020 protocol used, the ADO–TPB framework, key findings (antecedents, decisions, outcomes), and the proposed STR model — covering all PRISMA abstract elements.
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Section 1 (Introduction), paragraphs 3–6: Describes the fragmented state of XAI–financial fraud literature across technical, behavioural, and regulatory perspectives. Explicitly identifies three research gaps (lack of integrated framework, limited governance exploration, insufficient attention to trust/compliance) as the rationale for the review.
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Section 1 (Introduction): Four explicit Research Questions are stated — RQ1 (antecedents, decisions, outcomes), RQ2 (geographic/journal/type distribution), RQ3 (research gaps), and RQ4 (theoretical and managerial implications and future directions).
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Section 2.3 (Operational Search Strategy and Eligibility Criteria) and Table 1: Full inclusion/exclusion criteria are specified across 8 dimensions (keyword scope, subject area, document type, source type, access type, publication stage, language, journal quality). Retained studies were grouped by the ADO–TCCM framework and SPAR-4-SLR protocol (Section 2.5).
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Section 2.3: The Scopus database was specified as the sole primary information source. Studies were further filtered against the ABDC Journal Quality List. The search covered publications from 2015 to 2026. The exact date of the final Scopus search query execution has now been added explicitly to Section 2.3 to fully satisfy this item.
Search strategy	7	Present the full search strategies for all databases, registers and websites,	Section 2.3 and Table 1: The complete Boolean search string is provided in

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		including any filters and limits used.	Table 1, including all three conceptual cluster operators (TITLE-ABS-KEY), all eligibility filters (PUBYEAR, SUBJAREA, DOCTYPE, SRCTYPE, OA, PUBSTAGE, LANGUAGE), and their Scopus operationalisations.
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Sections 2.3–2.4 and Figure 2 (PRISMA Flow Diagram): The selection process is described — automated Scopus filters were applied (12,344 records excluded), followed by ABDC quality filtering (157 records excluded), yielding 99 final articles. Amendments have been made to the manuscript to clarify the screening procedure, indicating that title/abstract and full-text screening were conducted using predefined inclusion and exclusion criteria, with borderline studies retained to minimise selection bias and ensure consistency.
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Section 2.5 (SPAR-4-SLR Protocol) and Figure 3: Data collection is described using the SPAR-4-SLR framework. Amendments have been made to the manuscript to clarify the data extraction process , specifying that a structured coding framework was used to systematically extract and classify data across all included studies, with consistency ensured through a standardised protocol and iterative validation of coding decisions.
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Section 4.3 and Table 11: Outcome constructs are listed and defined — Decision Accuracy, False Positive Reduction, Model Credibility (attitudinal/precision), Audit Transparency, Institutional Legitimacy, Sustainable Performance (normative/compliance), and Procedural Justice, User Acceptance, Competitive Advantage (control/fairness).
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Sections 3.1–3.8 and Tables 3–8: Variables extracted include publication year (Table, Fig. 5), journal and ABDC ranking (Table 2), country of affiliation (Table 3), theoretical framework (Table 4), methodology type (Table 5), industry sector (Table 6), data typology (Table 7), and decision type taxonomy (Table 8).
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study	Section 2.3 (Limitations paragraph) and Section 8 (Limitations): The manuscript acknowledges and discusses potential sources of bias —

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		and whether they worked independently, and if applicable, details of automation tools used in the process.	single-database restriction (Scopus only), open-access filter, and subject category limitations. The ABDC Journal Quality List was used as a quality proxy. This review is a qualitative SLR/meta-framework study; formal quantitative risk-of-bias tools (e.g., ROBIS) were not applied. and this has now been explicitly stated in the Methods.
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Not applicable: This is a qualitative systematic literature review and meta-framework study; no statistical effect measures or meta-analysis were conducted. Section 2 has been amended to state, 'As this review employs qualitative thematic synthesis rather than quantitative meta-analysis, no formal effect measures were calculated' to ensure compliance.
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Section 2.4–2.5: Studies included in the final corpus (n=99) were grouped for synthesis according to the SPAR-4-SLR protocol (Assemble, Arrange, Assess) and then mapped onto the ADO–TPB meta-framework (Sections 4.1, 4.2, 4.3).
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Section 2.5 and Tables 3–11: Data were prepared through thematic classification and tabular mapping across the SPAR-4-SLR stages. Descriptive bibliometric data (publication counts, country distributions, journal distributions) were aggregated into structured tables for synthesis presentation.
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Sections 3–4 and Figures 5–6, Tables 2–11: Results are displayed through descriptive tables (journal distribution, country distribution, theoretical frameworks, methodology, sectors, data typology, decision taxonomy, ADO antecedents, decisions, outcomes) and figures (annual scientific production, ADO meta-framework diagram).
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Section 2.1 and 2.5: Qualitative thematic synthesis was employed using the SPAR-4-SLR protocol combined with the ADO–TPB meta-framework. No meta-analysis was performed. The rationale for qualitative synthesis is given in Section 2.1 (evidence-based review design following Tranfield et al., 2003; Snyder, 2019; Webster & Watson, 2002).
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Sections 3.4–3.8 and Tables 4–8: Heterogeneity in the corpus is explored through subgroup categorisation across five dimensions: theoretical framework (Table 4), methodology type (Table 5), industry sector (Table 6), data typology (Table 7), and decision-type taxonomy (Table 8). No

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			statistical meta-regression was conducted.
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Section 2.3 (Limitations paragraph) and Section 8 (Limitations): Sensitivity of results to inclusion criteria is discussed — specifically the impact of restricting to Scopus/ABDC/open-access on coverage. Limitation of single-database search and discipline-specific exclusion are acknowledged as potential sources of sensitivity. No formal statistical sensitivity analysis was conducted, consistent with qualitative SLR methodology.
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Section 2.3 and Section 8: Publication bias risk is acknowledged — restriction to open-access Scopus-indexed ABDC-ranked articles may exclude relevant grey literature or technical computer-science-domain studies. The authors discuss the mitigating effect of growing open-access availability post-2020. No formal funnel plot or statistical test for reporting bias was applied.
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Section 8 (Limitations): The manuscript acknowledges the dependency of findings on the quality and scope of the 99 underlying articles. Certainty is supported through the use of ABDC-ranked journals (ensuring peer-reviewed quality) and the SPAR-4-SLR structured synthesis protocol. Note: The manuscript does not use formal certainty frameworks (e.g., GRADE). This should be explicitly stated.
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Section 2.4 and Figure 2 (PRISMA Flow Diagram): Full selection results reported — 12,600 initial Scopus records → 12,344 excluded by automated filters → 256 remaining → 157 further excluded by ABDC quality filter → 99 final articles included. PRISMA Flow Diagram (Figure 2) visually presents the sequential stages.
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Section 2.3 (Limitations paragraph): Reasons for exclusion are explained — studies indexed solely in Web of Science, IEEE Xplore, or ACM Digital Library were excluded because the review focuses on business/management/finance governance rather than algorithmic optimisation. Closed-access articles were excluded. NO subjective exclusions except the specified ones made through objective pre-defined filtration criteria in Scopus Database & ABDC Journal Quality Filter as specified in Table 1 were applied & displayed in PRISMA Diagram so the

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			case of near subjective exclusion does not seem to arise.
Study characteristics	17	Cite each included study and present its characteristics.	Section 3 (Analysis & Synthesis) and Tables 2–8: Characteristics of included studies are presented through systematic tables — journal distribution and ABDC ranking (Table 2), country of origin (Table 3), theoretical frameworks (Table 4), research methodology (Table 5), industry sector (Table 6), data typology (Table 7), and decision-type taxonomy (Table 8). All 99 studies are cited throughout.
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Section 8 (Limitations): Risk of bias at the study level is not formally assessed using a quantitative tool for each individual study. The manuscript acknowledges this limitation (qualitative SLR scope). Quality was ensured at the corpus level through the ABDC Journal Quality List filter. This should be explicitly stated as a limitation of study-level bias assessment.
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Tables 9–11 and Section 4: Individual studies are cited within each ADO construct category. This is a qualitative synthesis; individual statistical effect estimates are not applicable. Study-level contributions are represented through citation within thematic tables (Antecedents: Table 9; Decisions: Table 10; Outcomes: Table 11).
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Sections 4.1–4.3 and Section 5: Each ADO layer synthesis (Antecedents, Decisions, Outcomes) opens with a characterisation of contributing studies mapped to TPB dimensions. Risk of bias at corpus level is acknowledged in Section 8.
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Not applicable: No statistical meta-analysis was performed. Qualitative thematic synthesis results are presented in Sections 4–5 and Tables 9–11.
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Sections 3.4–3.8: Heterogeneity across the corpus is explored through multi-dimensional subgroup breakdowns (theoretical frameworks, methodology, sector, data type, decision type). Causes of variation (disciplinary focus, FinTech vs. legacy banking context, quantitative vs. qualitative design) are discussed.
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Section 8 (Limitations): Sensitivity of findings to the Scopus/ABDC/open-access restriction is discussed qualitatively. No formal statistical sensitivity

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			analysis was conducted. This is appropriate for a qualitative SLR and should be explicitly stated.
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Section 2.3 and Section 8: Risk of publication/reporting bias is acknowledged — open-access and Scopus/ABDC restrictions may introduce selection bias. Mitigating factors (rising open-access prevalence post-2020; focus on business/management domain as epistemologically coherent) are discussed.
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Section 8 (Limitations): Evidence certainty is supported by the use of ABDC-ranked peer-reviewed journals. Formal GRADE or similar certainty rating is not used, consistent with qualitative systematic review practice. This should be explicitly acknowledged.
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Section 5 (Discussion): Results of all four RQs are interpreted in the context of the broader XAI–FinTech–governance literature. The findings are related to prior work on TPB, RBV, Institutional Theory, Socio-Technical Systems, and Dynamic Capabilities (Section 6.1, Table 12).
	23b	Discuss any limitations of the evidence included in the review.	Section 8 (Limitations) and Section 2.3: Limitations of included evidence are discussed — Scopus-only source, ABDC quality filter, open-access restriction, exclusion of technical XAI studies (IEEE/ACM), and dependence on the quality of underlying articles.
	23c	Discuss any limitations of the review processes used.	Section 8 (Limitations) and Section 2.3: Review process limitations discussed — single-database restriction potentially missing technical CS literature; open-access filter potentially introducing selection bias; subject-area limitation excluding engineering/CS domains; and the absence of a formal quantitative risk-of-bias tool.
	23d	Discuss implications of the results for practice, policy, and future research.	Section 6 (Implications) — Table 12 (Theoretical), Table 13 (Managerial & Policy); Section 7 (Future Research Directions) — Table 14: Extensive theoretical implications (STR Model advancements to TPB, STS, DCV), managerial/policy implications across 7 focus areas, and 8 future research frontiers are provided.
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	The manuscript has been revised to explicitly state that 'This systematic review was not prospectively registered in PROSPERO or any other review

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			registry.' as required for PRISMA 2020 compliance.
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	A statement has been added to Section 2.1, stating that 'A formal review protocol was not prepared prior to conducting this review.' as required for PRISMA 2020 compliance.
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable: As stated; the review was not registered and no formal protocol was prepared
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Funding Statement (end of manuscript): 'This research received no external funding.' — This directly satisfies Item 25.
Competing interests	26	Declare any competing interests of review authors.	Not explicitly stated in the manuscript as a separate Conflict of Interest declaration. A formal statement must be added (e.g., 'The authors declare no conflicts of interest'). This is required for PRISMA 2020 compliance.
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Data Availability Statement (end of manuscript): 'Data sharing is not applicable.' Has been provided in compliance with MDPI Research Data Policies” as stated at https://www.mdpi.com/ethics .

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