REVIEW ARTICLE

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Big data management algorithms
in artificial Internet of Things-based fintech

Abstract

Research background: Fintech companies should optimize banking sector performance in assisting enterprise financing as a result of firm digitalization. Artificial IoT-based fintech-based digital transformation can relevantly reverse credit resource misdistribution brought about by corrupt relationship chains.

Purpose of the article: We aim to show that fintech can decrease transaction expenses and consolidates firm stock liquidity, enabling excess leverage decrease and cutting down information asymmetry and transaction expenses across capital markets. AI- and IoT-based fintechs enable immersive and collaborative financial transactions, purchases, and investments in relation to payment tokens and metaverse wallets, managing financial data, infrastructure, and value exchange across shared interactive virtual 3D and simulated digital environments.

Methods: AMSTAR is a comprehensive critical measurement tool harnessed in systematic review methodological quality evaluation, DistillerSR is harnessed in producing accurate and transparent evidence-based research through literature review stage automation, MMAT appraises and describes study checklist across systematic mixed studies reviews in terms of content validity and methodological quality predictors, Rayyan is a responsive and intuitive knowledge synthesis tool and cloud-based architecture for article inclusion and exclusion suggestions, and ROBIS appraises systematic review bias risk in relation to relevance and concerns. As a reporting quality assessment tool, the PRISMA checklist and flow diagram, generated by a Shiny App, was used. As bibliometric visualization and construction tools for large datasets and networks, Dimensions and VOSviewer were leveraged. Search terms were "fintech" + "artificial intelligence", "big data management algorithms", and "Internet of Things", search period was June 2023, published research inspected was 2023, and selected sources were 35 out of 188.

Findings & value added: The growing volume of financial products and optimized operational performance of financial industries generated by fintech can provide firms with multifarious financing options quickly. Big data-driven fintech innovations are pivotal in banking and capital markets in relation to financial institution operational efficiency. Through data-driven technological and process innovation capabilities, AI system-based businesses can further automated services.

Introduction

Competitive and innovative financial products and services, such as cryptocurrency transaction records, crypto and QR payments, and virtual trading, configure decentralized, immersive, and digital experiences and transactions in 3D digitally simulated environments by use of blockchain technologies, data visualization tools, and artificial intelligence (AI)-enabled

smart workflows. Immersive virtual banking and financial technology (fintech) services optimize virtual financial planning and products (Doumpos *et al.*, 2023; He *et al.*, 2023a; Mirza *et al.*, 2023a; Rabbani *et al.*, 2023), financial data management and transaction systems (Awais *et al.*, 2023; Babaei *et al.*, 2023; Ha, 2023), and investment decisions in the metaverse economy through automatic data collection. Harnessing reporting quality assessment and data visualization tools, we fill the research gap in the current literature by proving that fintech services configure frictionless, instant, affordable, and flexible digital payments (Khan *et al.*, 2023; Rahmani *et al.*, 2023; Wang *et al.*, 2023; Yan, 2023), AI-powered transaction screening and monitoring (Chen *et al.*, 2023; Lai *et al.*, 2023; Mariani *et al.*, 2023; Singh, 2023), and cloud-based instant payment processing through digital wallets, virtual cards, credit decision automation, peer-to-peer payment networks, and money-transfer apps (Gonçalves *et al.*, 2023; Sampat *et al.*, 2023; Wu *et al.*, 2023; Zheng *et al.*, 2023).

Previous literature has indicated that AI-powered mobile apps, blockchain-based payment services, and financial planning, payment automation, and budgeting tools (Akmal *et al.*, 2023; Osei-Assibey Bonsu *et al.*, 2023; Upreti *et al.*, 2023; Zhao *et al.*, 2023) optimize customized credit products in terms of automated debt payments, refinancing loans, and credit score building (Jareño & Yousaf, 2023; Lai *et al.*, 2023; Mirza *et al.*, 2023b; Su & Xu, 2023), driving operational excellence, providing personalized feedback and targeted coaching (Ben Romdhane *et al.*, 2023; Gonçalves *et al.*, 2023; Li *et al.*, 2023; Rahmani *et al.*, 2023), and delivering increased customer engagement, service, and satisfaction (Edo *et al.*, 2023; He *et al.*, 2023b; Mahmud *et al.*, 2023). We draw systematic comparisons and specify the need to focus on how artificial IoT-based fintech and generative AI algorithms enable banking operations and loan application automatic approval through multi-layer transaction monitoring for instant payments, automation and digitization services, and digital wallets (Caragea *et al.*, 2023; Jareño & Yousaf, 2023; Jiang, 2023; Qiu *et al.*, 2023), leading to hyperpersonalized financial services and products (Awais *et al.*, 2023; Babaei *et al.*, 2023; Ha, 2023) with lowered operational costs and increased sustainable value creation.

Our systematic review clarifies that fintech-based banking management optimizes operational decision-making, risk assessment, efficiency, performance, forecasting, and regulation (Doumpos *et al.*, 2023) by using machine learning algorithms in financial and lending services. Fintech can

articulate an extensive data system concerning companies' financial and non-financial input to assist lenders in advancing heterogeneous customized financial products (Lai *et al*., 2023), decreasing the financial service threshold as enterprises can acquire inexpensive and accessible financial services effortlessly. Product, process, business model, and social innovation shape AI deployment in Industry 4.0-oriented firms with the aim of value creation and sustainable innovation management and entrepreneurship (Mariani *et al*., 2023) by deploying big data analytics and digitalization process to attain competitive advantage. AI-based stocks and tokens undergo quite low levels of variable connectedness that may increase throughout economic turbulence (Jareño & Yousaf, 2023), shaping investment decisions in the cryptocurrency market. Artificial Internet of Things (IoT)-based fintech boosts valuable financial data mining and provide swift and streamlined services to customers (Upreti *et al*., 2023): data optimization techniques and wireless communication tools can harness deep reinforcement neural network- and fuzzy rule-based secure transmission algorithms, decreasing the credit risk.

The manuscript includes the following sections: literature review (covering AI-enabled financial and banking services that increase customer loyalty and engagement, AI-driven fintech services enabling error-free payment processes, and generative AI, machine learning algorithms, and big data analytics assisting financial transaction networks); methodology (by using quality, reporting quality assessment, and data visualization tools); results (by citation correlations, how IoT- and AI-based order-to-cash workflow automation assists financial operations, how generative AI-based financial advice and data-driven products ensure decision processing and automation in seamless and convenient digital payment services, how fintech companies can add value across the capital market by harnessing AI analytical techniques, how machine learning and predictive algorithms and big data can identify fintech anomalies, and how machine learning algorithms can inspect massive volumes of financial data, informing investment decisions and risk management); big data-driven fintech innovations in banking and capital markets (describing how big data-driven fintech innovations are pivotal in banking and capital markets in relation to financial institution operational efficiency); big data analytics-based machine and deep learning algorithms in fintech banking (explaining how commercial banks can develop fintech-based business strategies and operation capabilities in relation to liquidity and credit risk-taking);

artificial IoT-based fintech innovations in terms of products and services (clarifying how AI-based financial forecasting, risk management tools, and predictive analytics are decisive in financial transactions and services); discussion (with regard to AI- and IoT-based fintechs enabling immersive and collaborative financial transactions, purchases, and investments); conclusions and contributions (particularly as regards fintech lending facilitating credit services and financial inclusion); limitations and further directions of research (in terms of topic, source selection, and period, respectively financial innovation and stability analysis across financial markets through mobile payments and cryptoassets).

Literature review

AI-enabled financial and banking services, big data management systems, and seamless mobile payments, transactions, investments, and budgeting based on virtual token currency exchanges and digital wallets and assets (Doumpos *et al.*, 2023; Mirza *et al.*, 2023a; Rabbani *et al.*, 2023) increase customer loyalty and engagement through coherent real-time immersive and interactive experiences (Awais *et al.*, 2023; Babaei *et al.*, 2023; Ha, 2023). AI-powered and virtual reality financial advice and support (He *et al.*, 2023a; Lai *et al.*, 2023; Sampat *et al.*, 2023) enable frictionless blockchain transactions as regards digital assets, customized and personalized blockchain- and crypto-based financial services, and virtual credit and lending (Caragea *et al.*, 2023; Jareño & Yousaf, 2023; Qiu *et al.*, 2023) by use of big data analytics and cloud computing technologies (Gonçalves *et al.*, 2023; Wu *et al.*, 2023; Zheng *et al.*, 2023).

AI-driven fintech services enable error-free payment processes (Akmal *et al.*, 2023; Osei-Assibey Bonsu *et al.*, 2023; Upreti *et al.*, 2023) through built-in time-tracking capabilities, automated upcoming payment reminders, and cash flow forecasting (Chen *et al.*, 2023; Mariani *et al.*, 2023; Singh, 2023), reducing debt-driven financial risk and optimizing prediction-based automated visual workflows and risk-based investment operations and decision-making (Gonçalves *et al.*, 2023; Li *et al.*, 2023; Rahmani *et al.*, 2023). AI-built customer profiles and acquisition, facial recognition and cloud computing technologies, and decision support tools (Ben Romdhane *et al.*, 2023; Lai *et al.*, 2023; Yan, 2023) are decisive in payment balance checking, credit risk augmentation, insurance pricing optimization, promotion tailor-

ing, and suspicious transaction detection (Khan *et al.*, 2023; Rahmani *et al.*, 2023; Wang *et al.*, 2023).

AI-based predictive maintenance and product-complexity management, geolocation tracking, machine learning, location intelligence data, and face recognition technologies (Jiang, 2023; Lai *et al.*, 2023; Zhao *et al.*, 2023) can drive transactional engagement, operational data and support, and investment decisions (Jareño & Yousaf, 2023; Mirza *et al.*, 2023b; Su & Xu, 2023) for frictionless mobile transaction experiences. Generative AI, machine learning algorithms, and big data analytics assist financial transaction networks in historical data analysis, payment processing and routing optimization, regulatory filing automation, transaction time and operational cost decrease, high-volume payment flow and spend management, and risk scenario simulation (Edo *et al.*, 2023; He *et al.*, 2023b; Mahmud *et al.*, 2023).

Methodology

AMSTAR is a comprehensive critical measurement tool harnessed in systematic review methodological quality evaluation, performing swift and reproducible assessments of evidence through literature search reliability, adequacy, validity, and usability. DistillerSR is harnessed in producing accurate and transparent evidence-based research through literature review stage automation by leveraging AI-based title, abstract, full text, and study design screening and assessment workflows in terms of knowledge synthesis consistency and quality and transparent and repeatable method reporting by processing article citations and research productivity through intelligent workflow-based collection and triage literature management for duplicate citation identification and removal. MMAT appraises and describes study checklist across systematic mixed studies reviews in terms of content validity and methodological quality predictors by data collection, question criteria and screening, and analysis techniques, determining design type, evaluating research quality, and configuring an overall quality score, resulting in reliability optimization. Rayyan is a responsive and intuitive knowledge synthesis tool and cloud-based architecture for article inclusion and exclusion suggestions through screening and selecting title, abstract, and full-text, expediting evidence availability, transparency, and reproducibility in terms of methodological quality, extraction data procedures, duplicate detection, automatic judgment validation, and data syn-

thesis and reporting. ROBIS appraises systematic review bias risk in relation to relevance and concerns by integrating study eligibility criteria, identification, selection, and appraisal, data collection, and synthesis and findings throughout the review process, design, results and conclusions. Literature search inappropriateness, unsatisfactory reporting, methodological quality deficiencies, and study inclusion bias can generate poor results in relation to the employed quality tools.

Search terms were "fintech" + "artificial intelligence", "big data management algorithms", and "Internet of Things", the search period was June 2023, published research inspected was 2023, and the selected sources were 35 out of 188 (Table 1). As a reporting quality assessment tool, the PRISMA checklist and flow diagram, generated by a Shiny App, were used, displaying the stream of information across various systematic review phases, organizing the identified, screened, included, and excluded records in evidence syntheses. As bibliometric visualization and construction tools for large datasets and networks, Dimensions and VOSviewer were leveraged for key pattern identification of interactive content in terms of node size in relation to co-authorship (links), documents, and citations, and of node color as regards average publication year and citations, and cluster.

Results

We analyzed citation correlations in relation to co-authorship, to citation, to bibliographic coupling, and to co-citation, showing that analytical capabilities of IoT- and AI-powered financial decision-making, choices, and data related to advisory services improve the digital payment infrastructure, payment routing, cloud-based business banking operations, and digital asset products, reducing transaction times, expanding lending operations, and enabling smooth payment flows. Generative AI and machine learning algorithms, robotic process automation technologies, application programming interfaces, and business process management tools enable fast and convenient financial services and transactions through data analysis, product offering expansion, risk assessment, real-time performance analysis and monitoring, and fraud detection. IoT- and AI-based order-to-cash workflow automation assists financial operations, customer and vendor risk assessment, spot and futures trading, digital payment system reconciliation, sustainable risk-adjusted returns, custodial wallet and cryptoasset

custody services, and cash management, enabling fintech connectivity and improving customer services.

Figure 2 indicates that digital twin-enabled industrial IoT and AI-based Internet of Manufacturing Things systems integrated in supply chains optimize operational efficiency in companies, leading to customized products and services (Mariani *et al.*, 2023), and articulating sustainable development and financial and innovation sustainability and configuring green business models. Consumers' feedback to AI fintech systems in opposition to human credit decisions is typically more immoderate for individuals having high (matched up against low) rejection sensitivity (Gonçalves *et al.*, 2023), but deep and machine learning algorithms do not adversely impact user satisfaction. Generative AI-based financial advice and data-driven products ensure decision processing and automation in seamless and convenient digital payment services, diversifying revenue streams, creating innovative value propositions, achieving significant operational performance, and creating frictionless mobile transaction experiences.

Figure 3 indicates that fintech companies can add value across the capital market by harnessing AI analytical techniques (Yan, 2023) that can optimize intermediary work, supply matching predictions, identify potential customers, and screen asset targets due to big data-based innovative financial industry. By harnessing big data analytics, AI-based stock trading systems predict and enhance automated stock price fluctuations, while AI-based volatility forecasting can be leveraged in risk assessment and portfolio management (Rahmani *et al.*, 2023), increasing financial performance and profitability of efficient and productive businesses. Blockchain-based payment and corporate banking services further enterprise resource planning, AI-driven customer engagement, banking relationship digitization, inter-bank connectivity, cash management processes, treasury management systems, and cash flow forecasts, driving big data-based process automation and seamless payment experiences.

Figure 4 indicates that machine learning and predictive algorithms and big data can identify fintech anomalies (Mirza *et al.*, 2023a) through fraud detection techniques. The growing volume of financial products and optimized operational performance of financial industries generated by fintech can provide firms with multifarious financing options quickly, decreasing firms' rationale to maintain a significant level of debt and information asymmetry in relation to subsequent fund demands (Lai *et al.*, 2023), releasing excess leverage to diminish financial insolvency risks. Multiagent real-

istic simulations in digital financial forecasting and crime management, risk analysis and management, portfolio optimization, and trading integrate multiple AI agents, while improving lending and investing procedures, policy regulations, functions, and operations, and product and customer journeys.

Figure 5 indicates that machine learning algorithms can inspect massive volumes of financial data, informing investment decisions and risk management, and analyzing market trends (Jareño & Yousaf, 2023) while advancing predictive models able to forecast stock prices. Fintech consolidates firm stock liquidity, enabling excess leverage decrease and cutting down information asymmetry and transaction expenses across capital markets, strengthening stock price informativeness (Lai *et al.*, 2023), being conducive for companies to acquire equity funds, and curtailing excessive leverage levels. Artificial IoT-based fintech algorithms and big data analytics optimize cloud-based anti-money laundering solutions, financial crime and fraud prevention, suspicious activity monitoring, and enterprise fraud management, streamlining internal processes.

Big data-driven fintech innovations in banking and capital markets

Market capitalisation and volume of shares can fluctuate with reference to market conditions and firm performance and financial infrastructure in AI stocks (Jareño & Yousaf, 2023) concerning optimal investment portfolios. Big data-driven fintech innovations are pivotal in banking and capital markets in relation to financial institution operational efficiency, leading to sustainable organizational development by decreasing information asymmetry and furthering coherent credit market development (Lai *et al.*, 2023), and thus generating strict lending standards, improved risk pricing, and rigorous bank supervision. Technology-driven financial innovations can be decisive (He *et al.*, 2023a) in decreasing the volume of debt defaults and preserving the soundness of financial systems. Fintech integrates AI and big data analytics across accounting practices (Osei-Assibey Bonsu *et al.*, 2023), comprising performance, risk, and fraud management, financial reporting, auditing, and budgeting. There is a positive link between fintech investment and green lending (Mirza *et al.*, 2023b), and a direct impact of the former on the capital risk-adjusted return related to low expenses, enlarged product base, and decreased economic capital. Machine learning-

based fintech can shape bank risk management in relation to loan performance, information asymmetry, capital adequacy, financial inclusion, performance and operations, asset and liability quality, operating conditions, and liquidity risks (Doumpos *et al*., 2023) through big data processing and predictive modeling tools increasing market stability for sustainable products.

By deploying big data analytics, deep and machine learning algorithms, and cloud computing, fintech can refashion financial products and services and business strategies to supply private companies with funds swiftly from various financing channels (Lai *et al*., 2023), handling insufficient financing sources and cutting down high leverage ratios. Through data-driven technological and process innovation capabilities, AI system-based businesses can further automated services, optimizing product quality, design, development, operational processes, and manufacturing capacity through cognitive analytics and market forecasting (Mariani *et al*., 2023), thus delivering and capturing social value coherently. Big data analytics, deep learning and machine learning algorithms, and convolutional and recurrent neural networks assist fintech innovations (Caragea *et al*., 2023) with regard to financial products and services. Smart IoT devices are pivotal in FinTech services (Khan *et al*., 2023), optimizing payment processes, banking and regulatory systems, transaction settlement schemes, and financial stability risks. Fintech furthers the renewable energy company sustainable development by investment efficiency optimization (Jiang, 2023) through green credit approaches and information disclosure quality enhancement.

Big data analytics-based machine and deep learning algorithms in fintech banking

Green lending, savings, and crowdfunding furthers sustainable economic growth and low-carbon fintech enhance bank profitability through green and sustainable financial product and service digitalization (Mirza *et al*., 2023b), shaping economic growth and performance. Machine, deep, and reinforcement learning algorithms are pivotal in optimal portfolio allocation, stock trading, financial transaction and trading process automation, market entry and exit point identification, and risk assessment (Rahmani *et al*., 2023) by use of complex economic data in relation to economic perfor-

mance accurate predictions, informing investment decisions, decreasing costs and decision-making time, improving efficiency, and forecasting stock prices. Machine and deep learning algorithms influence fintech banking (Singh, 2023) by use of big data analytics. Fintech can optimize firm sales revenue and accounts receivable quality by enhancing customer screening and payment capabilities (Lai *et al.*, 2023), furthering internal capital generation strength while decreasing financing constraints and debt capital reliance. By using mobile app data and transaction history, fintech banking operations and financial management skills (Sampat *et al.*, 2023) can determine customer credit decisions together with product development and recommendations. Providing services digitally, fintech techniques improve financial institution operational efficiency in terms of transactions and procedures (Akmal *et al.*, 2023), increasing productivity and profitability while cutting down costs on automated trading and cryptocurrency platforms by integrating data analysis tools and corporate decision-making.

Transparent risk management systems can develop trust and facilitate real-time AI-based stock market and economic predictions and decision-making, cryptocurrency price predictions, fraud and money laundering detection, stock price movements, and exchange rate fluctuations (Rahmani *et al.*, 2023), increasing efficiency and cutting down expenses. Commercial banks can develop fintech-based business strategies and operation capabilities in relation to liquidity and credit risk-taking by leveraging big data analytics, cloud computing, and deep and machine learning algorithms across financial products and services (Zhao *et al.*, 2023), cutting down transaction costs. Regional fintech innovations considerably decrease financing constraints and optimize stock liquidity, leading to excess leverage alleviation (Lai *et al.*, 2023): the impact is noticeable for private firms having a somewhat unsatisfactory degree of capital market liberalization. Innovative digital financial processes, products, and services (Rabbani *et al.*, 2023) improve artificial intelligence usage awareness and confidence in big data-driven mobile banking tools, techniques, operations and transactions.

Artificial IoT-based fintech innovations in terms of products and services Deep and maching learning algorithms are instrumental in credit risk analysis, forecasting stock trading and market volatility prediction validity and accuracy, and banking risk management optimization (Rahmani *et al.*, 2023), companies thus making informed investment decisions. Fintech can decrease transaction expenses and boost stock liquidity, cutting down ex-

cess leverage by acquiring equity funding and impacting excessive debt governance (Lai *et al.*, 2023), fortifying default risk prevention and monitoring and internal governance supervision. Artificial IoT-based fintech innovations in terms of products and services in insurance and asset management impact state-owned and joint-stock commercial banks (Qiu *et al.*, 2023), while fintech patents typically generate detrimental consequences. To further the joint effort between fintech advancement and digital reconfiguration in decreasing enterprise credit costs (Chen *et al.*, 2023), fintech companies should optimize banking sector performance in assisting enterprise financing as a result of firm digitalization. Without constant digital transactions that enable economic cycle adherence (Ben Romdhane *et al.*, 2023), fintech upsides as regards inflation and unemployment decrease cannot be attained.

AI-based financial forecasting, risk management tools, and predictive analytics are decisive in financial transactions and services, transaction data, optimal asset allocations, market capitalizations, informed lending decisions, investment goals, and trading products (Rahmani *et al.*, 2023), articulating accurate and robust cryptocurrency trading and price predictions, and identifying cryptocurrency price patterns, correlations, and irregularities. Big data-based AI technologies can optimize corporate innovation efficiency of manufacturing enterprises by integrating external market competition, resource reallocation, and internal organizational structure (Li *et al.*, 2023), driving organizational growth and business development through products and service digital interconnections. AI influences income allocation between profits and wages by decreasing labor demand and boosting capital productivity (Wang *et al.*, 2023): with AI shocks the circulation of income transfers from labor to capital in terms of enterprise organizational configurations, staff training and dividend incentives, company owner characteristics, and industry factor endowments. Artificial IoT-based fintech-based digital transformation can relevantly reverse credit resource misdistribution brought about by corrupt relationship chains and furthers efficient resource flows (Su & Xu, 2023), but enhancing information transmission efficiency and not integrating fintech articulate complementary routes to credit corruption.

Discussion

Big data management and neural network algorithms, geospatial simulation and data mining tools, and deep learning-based geospatial mapping and object detection technologies (Andronie *et al.*, 2023a; Dabija *et al.*, 2022; Grupac *et al.*, 2023) configure fintech-based banking management in extended reality environments, building consumer trust. Big data and environment mapping algorithms and sensing and computing technologies (Andronie *et al.*, 2023b; Dabija *et al.*, 2023; Ionescu, 2022; Peters *et al.*, 2023) articulate cloud-based sustainable economic growth and low-carbon fintech. Robotic wireless sensor networks, geospatial mapping tools, computer vision and geospatial big data management algorithms, and deep learning-assisted smart process planning (Barbu *et al.*, 2021; Gordon, 2022; Lăzăroiu *et al.*, 2022) assist AI IoT-based fintech innovations, shaping customer experiences in the blockchain-based metaverse. AI-based decision-making and visual cognitive algorithms, dynamic routing technologies, IoT sensing networks, simulation modeling tools, and cyber-physical production systems (Andronie *et al.*, 2021a; Moldovan *et al.*, 2022; Zvarikova *et al.*, 2022) enable deep learning-assisted smart process, operational performance, and resource management of financial industries generated by fintech across Web3-powered metaverse worlds.

Deep learning-based image classification and geospatial big data management algorithms, haptic and biometric sensor and image recognition technologies, and movement and behavior tracking and event modeling and forecasting tools (Kliestik *et al.*, 2020; Kovacova *et al.*, 2022; Nica & Vahancik, 2023) further fintech products and services in mobile banking in the competitive metaverse economy. Biometric sensor technologies, ambient sound recognition software, earnings management, ambient sound recognition software, Industry 4.0 wireless networks, and predictive modeling tools (Kliestik *et al.*, 2022; Vagner *et al.*, 2021; Valaskova *et al.*, 2022) influence fintech banking and cyber-physical smart manufacturing systems in the economic infrastructure of the metaverse. Remote sensing data fusion techniques, Sustainable cyber-physical production systems, context awareness algorithms, AI-based digital financial services, and multimodal behavioral predictive analytics (Andronie *et al.*, 2021b; Cazazian, 2022; Gajdosikova *et al.*, 2023; Horak *et al.*, 2023) shape big data-driven fintech banking operations as regards corporate debt level, accounting information systems, and blockchain technology adoption across smart urban economy.

AI- and IoT-based fintechs enable immersive and collaborative financial transactions, purchases, and investments (Doumpos *et al*., 2023; Mirza *et al*., 2023a; Rabbani *et al*., 2023) in relation to payment tokens and metaverse wallets, managing financial data, infrastructure, and value exchange (He *et al*., 2023a; Lai *et al*., 2023; Sampat *et al*., 2023) across shared interactive virtual 3D and simulated digital environments. AI-driven fintech products, services, and experiences (Caragea *et al*., 2023; Jareño & Yousaf, 2023; Qiu *et al*., 2023) can be developed through artificial neural network architectures, cloud-based computing systems, and predictive algorithms (Akmal *et al*., 2023; Osei-Assibey Bonsu *et al*., 2023; Upreti *et al*., 2023) across extensive data analysis-based decision-making processes, fraud and money laundering prevention, prediction, and detection, regulatory and enforcement behaviors and mechanisms (Chen *et al*., 2023; Mariani *et al*., 2023; Singh, 2023), and payment and transaction checking. AI-based metaverse fintech, big data-driven investment decisions, virtual asset and real estate transactions and transferability, AI-powered financial advising, and immersive digital banking (Gonçalves *et al*., 2023; Li *et al*., 2023; Rahmani *et al*., 2023) develop on blockchain and cryptocurrency technologies, financial data modeling and visualization tools, and Internet of Things-based digital twins (Ben Romdhane *et al*., 2023; Lai *et al*., 2023; Yan, 2023) across the decentralized, scalable, and interoperable infrastructure of the extended reality- and blockchain-based metaverse. AI-enhanced financial, payment, and banking services (Khan *et al*., 2023; Rahmani *et al*., 2023; Wang *et al*., 2023) improve customer experiences and expectations (Jiang, 2023; Lai *et al*., 2023; Zhao *et al*., 2023) by managing and leveraging a seamless flow of data (Jareño & Yousaf, 2023; Mirza *et al*., 2023b; Su & Xu, 2023), boosting revenue and profitability (Gonçalves *et al*., 2023; Wu *et al*., 2023; Zheng *et al*., 2023), and building hyper-personalized and tailored digital products (Awais *et al*., 2023; Babaei *et al*., 2023; Ha, 2023) by use of mobile wallets, algorithmic trading tools, cloud-assisted digital systems, and real-time financial data (Edo *et al*., 2023; He *et al*., 2023b; Mahmud *et al*., 2023).

Conclusions

Fintech can provide companies with increasing financing channels and decrease the fund approval time, leading to financing constraint mitigation and diminishing firms' reliance on debt financing (Lai *et al*., 2023), and thus

improving business performance and market competitiveness. Deep and maching learning algorithms analyze price movements, exchange rate fluctuations, algorithmic trading volumes, data processing, market sentiment (Rahmani *et al*., 2023), integrating historical cryptocurrency data. Fintech institutions should integrate AI technologies and operational simulation modeling in credit assessment offerings (Gonçalves *et al*., 2023), improving the customer journey and social connectedness in terms of decision-making and satisfaction as regards transaction-oriented financial services and can be developed across retail banking environments. Fintech development enables bank credit expansion (Wu *et al*., 2023), with less significant impact in relation to state-owned commercial banks and more relevant influence as regards small banks. Financial leverage volatility is pivotal in the systemic financial risk constitution (Zheng *et al*., 2023), bringing about risk changes throughout fintech industries during economic downturns, with risks assimilated or distributed outward across spillover channels. Fintech lending facilitates credit services and financial inclusion, with machine learning algorithms deployed in relation to lending data (Babaei *et al*., 2023) to articulate creditworthiness estimates.

As specific contributions to the literature, the topic of this systematic review has not been investigated so far, as AI can forecast exchange rate fluctuations and support decision-making by use of data, event impact, and sentiment analysis techniques, predictive modeling tools, and algorithmic trading (Rahmani *et al*., 2023), without ensuring accurate exchange rate movement predictions. AI-based fintech affects users' perceptions of social support, satisfaction, and continuance intention (Lin & Lee, 2023) in mobile banking applications. Fintech development impacts channels at decreasing enterprise credit costs (Chen *et al*., 2023), encompassing both the mitigation of enterprise external financing limitations and the intensification in banking system internal competition levels. Machine learning-based business operation digitalization and technological developments assist peer-to-peer lending, digital advisory, mobile payment, and trading systems, crowdfunding, and crypto-assets (Akmal *et al*., 2023), furthering digital products and services to gain competitive advantage, leading to fintech effectiveness. Industrial policy adoption can assist companies in attracting financial subsidies and bank loans increasingly (He *et al*., 2023a), while decreasing financing expenses and thus the enterprise debt default risk.

We inspected research published in 2023 and included in Scopus and the Web of Science, covering big data management algorithms in artificial

IoT-based fintech. Subsequent interest should analyze financial innovation and stability across financial markets through mobile payments and cryptoassets. The scope of this systematic review does not advance how deep reinforcement learning-based fintech improves green finance, articulating corporate environmental performance. Future research should investigate consumer behavioral intention, acceptance, adoption, experiences in relation to fintech services.

AI IoT-based fintech innovations further green bonds and financial operations, sustainable economic development, clean energy, and business decision-making (Awais *et al.*, 2023; Ha, 2023), shaping green economic growth. Customer service quality influences perceived risk and behavioral intention as regards financial digitalization, electronic payment systems, mobile banking apps and financial transactions (Edo *et al.*, 2023), improving machine learning-based fintech adoption prediction accuracy. Usage continuance intention of value-adding fintech products and services in mobile banking (Mahmud *et al.*, 2023) articulates technological and financial capabilities of sustainable economic development.

Banks should intensify the internal control and risk management digital and intelligent reconfiguration to optimize fintech curbing consequences on credit corruption (Su & Xu, 2023), while constant credit risk control system investigation, credit operation supervision, and data source expansion in banks would fortify technological anti-corruption. Banks can decrease systemic financial risk-taking through optimizing quality internal controls by use of deep and machine learning-based fintech and big data analytics (He *et al.*, 2023b), preserving financial stability as regards business processes. Regional fintech facilitates companies' financing constraints and enhances stock liquidity (Lai *et al.*, 2023), resulting in excess leverage alleviation and information asymmetry mitigation, and in attaining credit resource optimal distribution.

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Annex

Table 1. Identified and selected sources

Topic	Identified	Selected
fintech + artificial intelligence	64	12
fintech + big data management algorithms	63	12
fintech + Internet of Things	61	11
Type of paper		
original research	163	33
review	8	2
editorial	5	0
book	1	0
conference proceedings	11	0

Note: Some topic overlapping.

Figure 1. PRISMA flow diagram
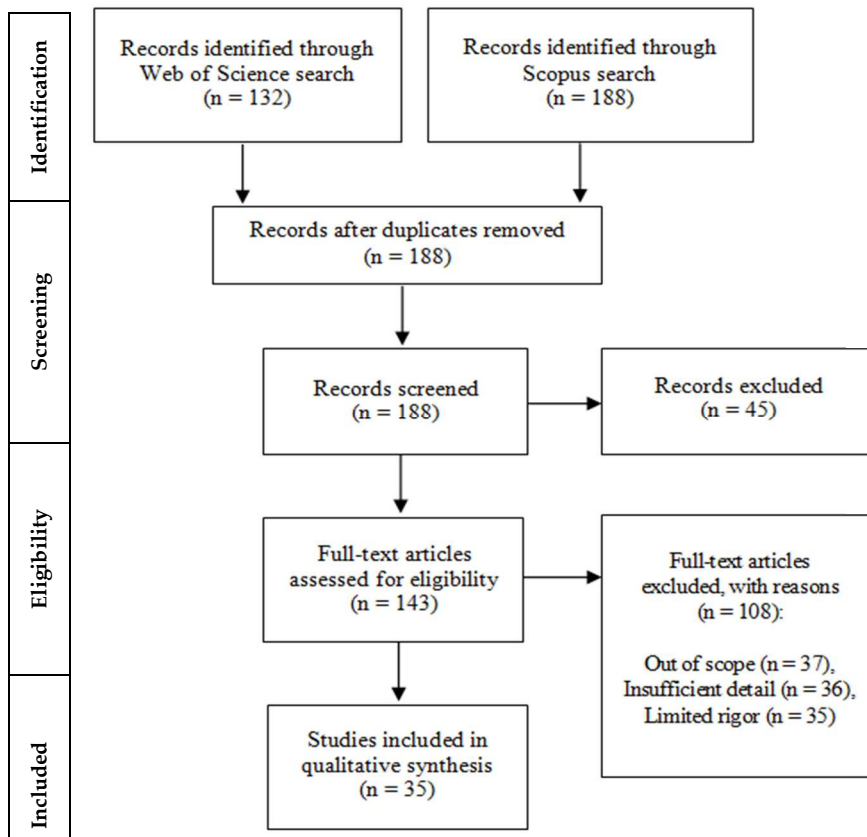
Figure 2. Co-authorship as regards big data management algorithms in artificial Internet of Things-based fintech
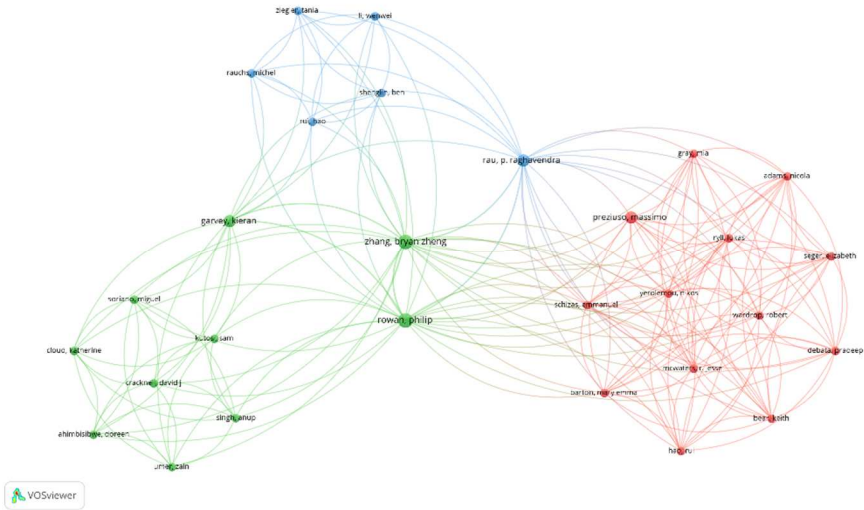

Figure 3. Citation as regards big data management algorithms in artificial Internet of Things-based fintech
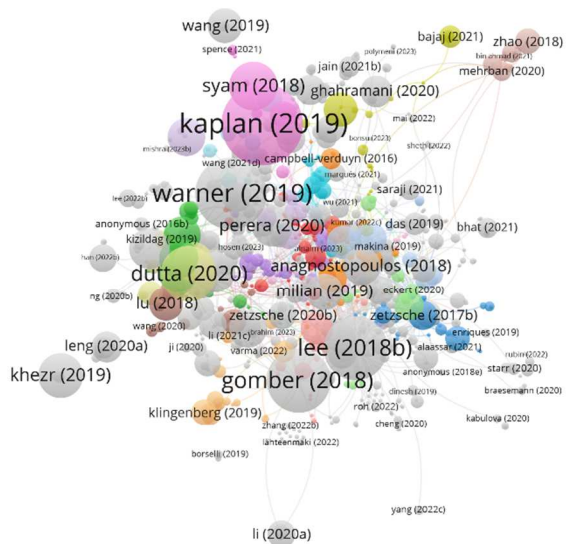
Figure 4. Bibliographic coupling as regards big data management algorithms in artificial Internet of Things-based fintech
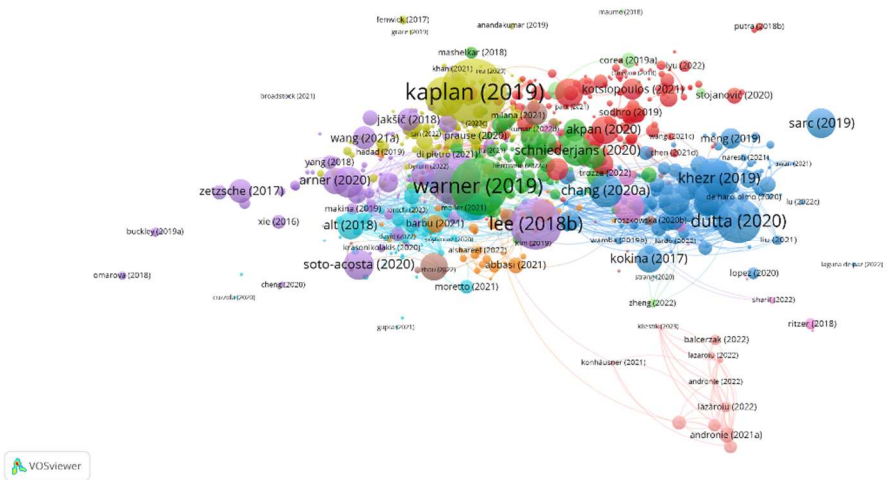

Figure 5. Co-citation as regards big data management algorithms in artificial Internet of Things-based fintech