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TEXT MINING AND VISUAL ANALYTICS IN EXPLORING TREND RESEARCH OF FINTECH DEVELOPMENT INDEX

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Abstract

Integrating knowledge from various sources is essential for the progress of science. Systematic Literature Reviews (SLRs) offer a solid approach for consolidating research findings in a particular field by identifying common themes, highlighting discrepancies, and gaining insight into the topic of interest. The study provides clear classifications of systematic literature reviews and bibliometric techniques to establish the foundation for a standardized literature synthesis and analysis process. Following this, we introduce an automated procedure for conducting systematic literature reviews to improve efficiency and shorten the duration of the review process. This procedure incorporates data mining techniques such as data cleaning, transformation, topic modelling, and natural language processing (NLP). To verify the efficiency of our proposed method, we applied it to analyze the trends in research concerning Fintech development indicators (Fintech index). Our findings indicate that the primary areas of focus among researchers globally are Fintech development and financial inclusion indicators. Conclusively, we suggest directions for applying text mining techniques that could be broadly used in the SLR workflow.

Keywords: *Fintech Index, Systematic Literature Review, Text Mining, Topic Modeling, NLP.*

1. Introduction

Systematic Literature Reviews (SLRs) emerged from the need for a rigorous method to synthesize research results from a multitude of primary sources, forming a cohesive and meaningful whole. In the guidelines of Kitchenham et al. (2009), the mention of SLRs could serve as a powerful tool for the researcher with three main purposes. One of the most prominent reasons is summarizing the existing body of research evidence on a particular topic for researchers to understand the current state of knowledge and identify any research gaps. By pinpointing these lacunae, systematic reviews pave the way for future investigation and suggest promising areas for further inquiry. SLRs can provide a robust framework or background for novel research activities. This foundation ensures that new research builds upon existing knowledge and avoids unnecessary duplication of effort.

The development of literature review methods has gone through a long evolution to improve some of the weaknesses existing in the traditional method. The weaknesses when implementing review methods are commonly fourfold: time consuming, information overload, biases, and uneven quality of research articles (Grant & Booth, 2009). The various review forms can be named narrative review - commonly known simply as traditional literature review (Baethge et al., 2019), (Rother, 2007); scoping review (Munn et al., 2018); or rapid review offer a timely delivery of insights for researcher, yet they are not without limitations (Stevens, 2001), (Brennan et al., 2020),.

Some researchers in various fields have adopted SLRs, a more rigorous procedure, to improve the quality of their reviews. Originally developed in medicine (Glasziou et al., 2001), SLRs provide a structured and unbiased approach to synthesize existing knowledge for better decisions on a particular medical intervention, treatment, or health condition of patients. The method later proved its applicability across fields of social welfare, education, and public health (Haddaway & Pullin, 2014). Additionally, SLRs can be used to evaluate the effectiveness of different software development methodologies, tools, or testing strategies (Kitchenham et al., 2009). Tranfield et al. (2003) earlier also argued for a shift towards systematic reviews as a way to improve the quality and impact of research in management, ultimately leading to more reliable knowledge and better-informed practices.

One of the indications considered best-in-class belongs to the product of (Moher et al., 2009) titled PRISMA. The key component of PRISMA is the flowchart, which visually depicts the flow of information throughout the review. This allows readers to understand how many studies were identified initially, how many were excluded at different stages for specific reasons, and ultimately, how many studies were considered relevant and included in the final review. The PRISMA procedure in Figure 1 is started when clear research questions guiding a focused search for relevant studies are defined. Researchers then meticulously determine the most reliable studies and assess their quality. The Screening and Eligibility stages in the PRISMA help eliminate duplicate studies and choose studies that are closest to the defined criterias for performing the synthesize of studiess (qualitative and quantitative). The process concludes with a transparent report with key outcomes and evidence certainty.

Performing a thorough SLR can be time-consuming laborious (Cates, 2005), (Cumpston et al., 2022). In the era of ever-growing volume of scientific research, Text Mining NAÏVE has emerged as a desirable tool for automated navigating the hidden treasures within the vast amount of textual data (de la Torre-López et al., 2023), (Aggarwal, 2015). This allows researchers to uncover hidden insights and trends within the data using machine learning algorithms. For instance, Support Vector Machines (SVM) can classify documents (e.g., spam detection, sentiment analysis) (Brereton & Lloyd, 2010); Latent Dirichlet Allocation (LDA) helps identify thematic structures within large datasets (Shen & Li, 2023), (Egger & Yu, 2022); Mallet (Machine Learning for Language Toolkit) (Wu et al., 2023) aids document classification, clustering, topic modeling, information extraction, and other machine learning applications related to text. The Gensim toolkit based on the Python language provides a wrapper for implementing Mallet's LDA algorithm inside Gensim. To ensure the effectiveness of LDA topic clustering, this paper chooses to optimize Gensim's built-in LDA algorithm with Mallet. The integration of Text Mining NAÏVE with the Systematic Literature Review (SLR) framework offers a synergistic approach that addresses the limitations of SLR in terms of time and effort. In the initial stage, TM aids in supercharged collecting and analysis, which has been traditionally reliant on manual searches with keyword filters (de la Torre-López et al., 2023).

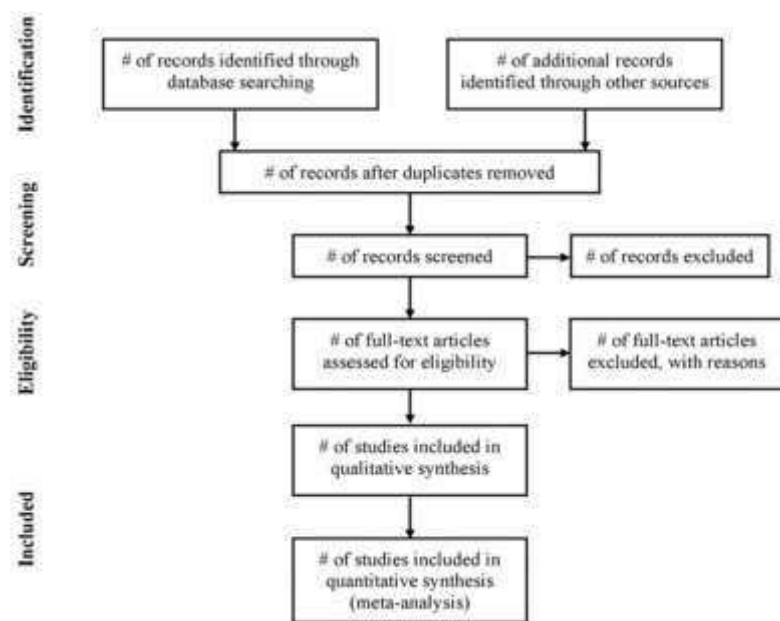


Figure 1. PRISMA chart for systematic reviews (Moher et al. (2009))

Text mining offers a powerful solution to these challenges, streamlining the literature search process within SLRs through the ability to analyze titles and abstracts in research articles to identify patterns, trends, and inconsistencies across studies (Thomas et al., 2011), (Bilge & Yaman, 2022). Compared to manual activities, TM can further mitigate the risk of errors associated with data extraction and summarization techniques. A number of text mining techniques are used to examine patterns within a sizable corpus of textual data in the following stages: Document classification for discerning relevant papers for inclusion/exclusion, NLP (spelling correction, lemmatization, indexing), information

retrieval (keyword search/querying and indexing), document clustering (phrase clustering); information extraction (relationship extraction/link analysis), web link analysis, and grammatical parsing and word sense variant (Thakur & Kumar, 2022).

Our study addresses two main objectives: (1) To propose an automated procedure for conducting systematic literature reviews using text-mining techniques. (2) Applying the proposed automatic procedure to identify trend groups of Fintech index.

The structure of this paper is organized as follows: The first section provides an explication of SRLs, text mining and its application in conducting SLRs. The second and third sections are dedicated to methodology and the practical application of text mining within SLRs. Here, the process unfolds: data collection is followed by filtering relevant Fintech Index research using the TF-IDF algorithm. We then present the clustering tackles topic organization, employing Support Vector Machines (SVM) and Naïve Bayes algorithms. With the results of topic modeling, the study identifies trends within each topic related to the Fintech Indexes in key areas. Part four discusses the findings and their practical significance. Finally, we conclude with key takeaways and some explorations of potential areas for future research.

2. Method

This section outlines our study approach with six phases: Data Collecting, Text pre-processing, Text Classification, Topic Modeling, Topic Analysis to investigate Fintech Index containing hundreds of research studies. Figure 2 represents the six phases of this investigation. The sections below give detailed information on each phase.

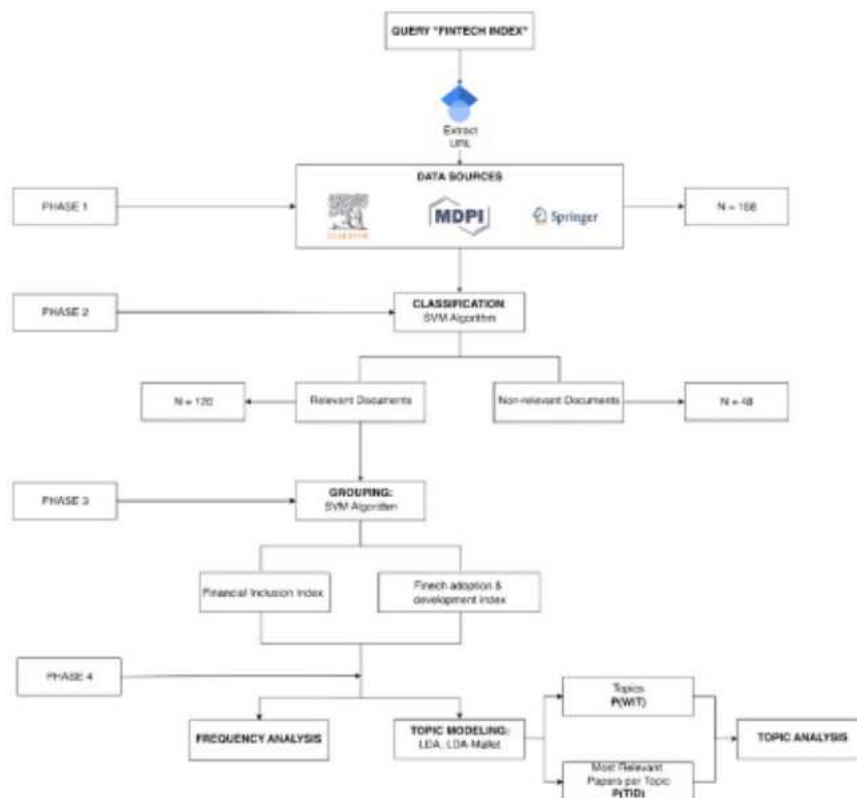


Figure 2. Research framework

2.1. Data collection

First, we accessed the Google Scholar website and query by term “Fintech Index” because Google Scholar is a subset of the larger Google search index. Afterwards, we crawled journal article URLs using Python’s BeautifulSoup module, and we found that Science Direct, MDPI, and Springer Link were the three database sources that had the most articles on the topic of “Fintech Index”. From url connections, we collected each paper’s title, abstract, authors, keywords, journal, and publication date from three main databases. In this step, we extracted 168 research publications from the query results including titles, abstracts, keywords, public years, authors, journals.

2.2. Text Pre-processing

The goal of the preprocessing stage is to remove any unnecessary words from the dataset. Text sorting typically involves four preprocessing stages: lowercase, tokenization, empty word elimination, and derivation [85]. Figure 3 shows the flowchart of the study’s preprocessing processes.

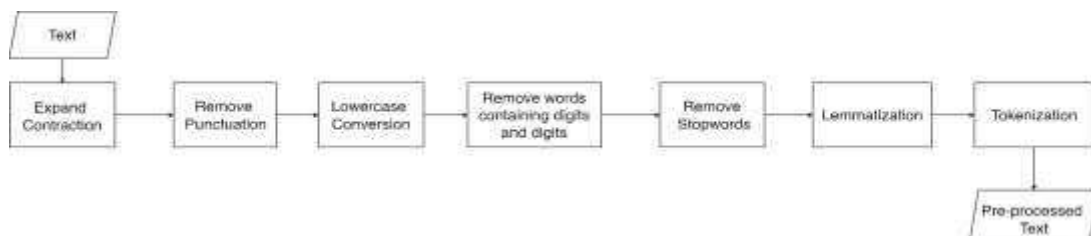


Figure 3. Pre-processing flowchart

2.3. Text classification

Text classification is a crucial problem in many Natural Language Processing (NLP) applications. Text classification is referred to as extracting features from raw text data and predicting the categories of text data based on such features.

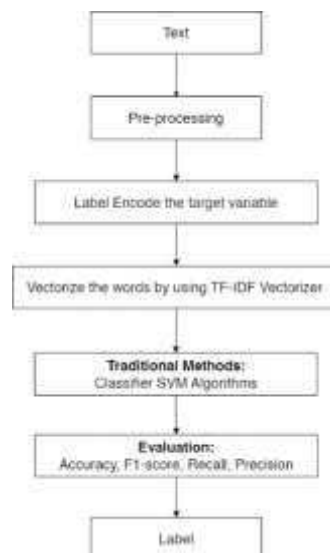


Figure 4. Text classification flowchart

Figure 4 illustrates a flowchart of the procedures involved in the text classification under the light of traditional method.

2.4. Topic modeling

Topic modeling serves as a robust approach in natural language processing and machine learning for uncovering underlying themes or topics within a corpus of texts [88]. One widely used algorithm for topic modeling is Latent Dirichlet Allocation (LDA), which posits that each document in the collection is a blend of topics, with each word in the document attributed to one of these topics. Then, we employ Mallet to further refine the topic modeling process and determine the optimal number of topics.

The outlined methodology comprises several key steps:

Step 1: Text pre-processing for the data.

Step 2: Execution of the LDA Algorithm and visualization of the identified topics.

Step 3: Comparative analysis of coherence between LDA and LDA-Mallet. This involves running the LDA-Mallet model with the number of topics set within the interval [2, 9] to determine the most appropriate number of topics.

Step 4: Visualization of the topic modeling results with the optimal number of topics.

3. Results

3.1. Public year and journal wise reporting

Figure 5 depicts the annual distribution of research publications on the Fintech Index between 2019 and 2024. A significant increase in research activity has occurred recently. Out of the total 168 research articles identified, only 6 were published prior to 2021. By the midpoint of 2024, the number of articles related to the "Fintech Index" keyword has already reached nearly 70% of the total number published in 2023. This rapid growth suggests a potential surge in quantitative Fintech research in the near future, likely driven by groundbreaking developments and widespread adoption across various industries. The data from 2021-2022 and 2022-2023 indicates a growing interest in novel Fintech models following the COVID-19 pandemic and the subsequent socio-economic shifts related to recovery and development. This trend suggests an exponential rise in the use of experimental methods to assess the level of development and popularity of Fintech solutions.

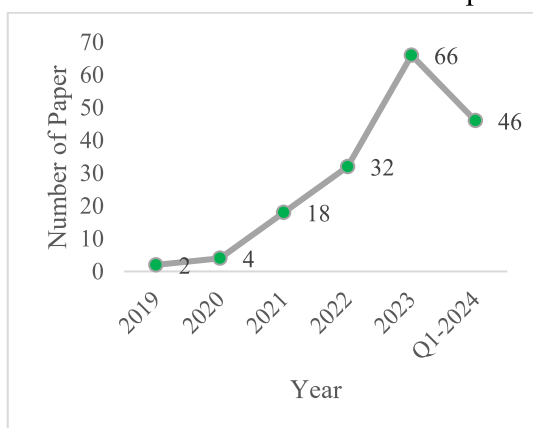


Figure 5. Number of publications by year



Figure 6. Distribution of research papers across journals

Figure 6 depicts the number of articles published across various journals within a six-year timeframe. While a significant portion of articles (“Others” category) appears to be published by a diverse range of lesser-known journals, exhibiting a sporadic and inconsistent pattern, a closer examination reveals a more focused trend among identified journals. Excluding the “Others” category, Sustainability emerges as a consistent contributor, with the highest number of articles published in 2022. As of the first quarter of 2024, Resources Policy appears to be taking the lead, publishing the most articles related to the Fintech index.

3.2. Word and theme descriptive analysis

Table 1A. Frequency of phrases across Financial Inclusion Index topic articles – generated by TF algorithms

No.	Word	Freq	Bigrams	Freq	Trigrams	Freq
1	financial	116	financial, inclusion	28	financial, technology, fintech	8
2	fintech	86	digital, financial	17	global, fintech, index	7
3	development	50	financial, technology	13	digital, finance, inclusive	5
4	inclusion	36	financial, development	12	inclusive, digital, finance	5
5	digital	34	financial, service	10	fintech, index, financial	4
6	index	31	fintech, index	9	financial, satisfaction, cashless	4
7	bank	22	fintech, development	9	satisfaction, cashless, payment	4
8	finance	21	digital, economy	9	financial, inclusion, indicator	4
9	technology	20	global, fintech	8	effect, fintech, poverty	3
10	payment	18	technology, fintech	8	marketbased, evolution, financial	3
11	country	18	financial, regulation	6	evolution, financial, structure	3
12	inclusive	17	payment, fintech	5	finance, inclusive, development	3
13	effect	17	financial, service	5	digital, inclusion, finance	3
14	region	16	development, fintech	5	set, financial, inclusion	3
15	innovation	15	latin, america	5	digital, financial, service	3

In table 1A, terms such as "digital financial," "digital economy," and "digital inclusion," as well as bigrams like "digital finance inclusive" and "digital financial service," emphasize a focus on the more comprehensive digital finance ecosystem which promotes financial inclusion. The use of the words "global", "latin america", "china", and "region" imply that the data takes a worldwide perspective of financial inclusion, possibly considering variations among regions. While "payment" and "service" appear on occasion, there show up to be an abundance of terms referring to particular financial services (e.g., loans, savings) that help to financial inclusion. Despite their rarity, the terms "regulation" and "policy" imply some thought has been given to the regulatory and policy factors that affect financial inclusion. Further inspection may disclose the particular rules or guidelines under discussion.

Table 1B. Frequency of phrases across Fintech Development and Adoption Index topic articles – generated by TF algorithms

No.	Word	Freq	Bigrams	Freq	Trigrams	Freq
1	fintech	590	fintech, development	64	financial, technology, fintech	25
2	bank	214	financial, technology	57	china, economic, growth	9
3	financial	168	commercial, bank	46	fintech, development, index	9
4	development	165	impact, fintech	38	effect, fintech, development	7
5	technology	119	bank, fintech	32	bank, liquidity, creation	7
6	risk	115	effect, fintech	29	fossil, energy, consumption	7
7	effect	103	fintech, adoption	28	generalized, method, moment	6
8	index	92	economic, growth	27	effect, bank, fintech	6
9	innovation	76	fintech, index	26	development, financial, technology	6
10	impact	75	development, fintech	25	method, moment, quantile	6
11	china	65	technology, fintech	25	moment, quantile, regression	6
12	resource	58	financial, service	22	quantile, regression, mmqr	6
13	commercial	54	risk, factor	20	chinese, commercial, bank	5
14	firm	53	fintech, innovation	17	fintech, ecosystem, index	5
15	market	53	liquidity, creation	16	similarity, risk, factor	5

The prevalence of bigrams such as “fintech development,” “fintech adoption,” and “fintech innovation” demonstrates a sustained interest in Fintech’s evolution and effect in table 1B. The use of phrases such as “risk,” “bank risk,” and “bank liquidity creation” suggests worry about possible hazards linked with Fintech development and its influence on financial stability. The terms “quantile regression,” “moment quantile regression,” and “generalized method of moments” imply the employment of potentially advanced statistical techniques to examine financial inclusion data. This suggests a shift to more advanced data analysis approaches. The country name “China” appears a lot, which indicates that people are extremely interested in how Fintech fits into the Chinese economy. An analysis of the frequency table reveals that the term “fintech ecosystem” appears 15 times, highlighting its centrality within Fintech Development or Adoption indices. To understand these indices effectively, we must first focus on the interacting elements within this ecosystem. Based on the frequency table repetitions, several key actors emerge: (1) Startups, (2) Technology developers, (3) The government, (4) Financial technology users and (5) Traditional banks

The high frequency of ‘fintech ecosystem’, ‘bank’, ‘firm’ in the table suggests a particular interest among the index developers (group 1) in understanding the methods by which value is exchanged between these various components within the ecosystem. This focus on value exchange implies a desire to assess the overall health and efficiency of the Fintech ecosystem, with the ultimate goal of fostering its sustainable development and adoption.

3.3. Correlated Topic Modeling

3.3.1. Fintech development and Fintech adoption index

Table 2. Interpreted topics of Fintech development and adoption index

Topic ID	Frequently used terms	Interpret Topic Label	Representative Reference
Fintech development and adoption index	DA1 index, study, market, technology, method, fintech, digital, spillover, high, economy	Fintech indexes for investor support	Le et al. (2021), Shaik et al. (2023), Rabbani et al. (2023)
	DA2 fintech, risk, financial, innovation, paper, enterprise, factor, analysis, industry, research	Fintech indexes for risks identification	Wei et al. (2022), Bu et al. (2023), Jiang et al. (2020)
	DA3 bank, fintech, effect, technology, commercial, datum, development, find, reduce, impact	The measurement of financial stabability	Daud et al. (2022), Lee et al. (2023), Tang et al. (2024)
	DA4 fintech, development, level, firm, impact, significant, investigate, provide, green, sustainable	Assessing Fintech's Environmental Sustainability	Zhu et al. (2024), Zeng et al. (2024), Guo et al. (2023)
	DA5 country, result, sector, finding, resource, model, financial, quantile, region, study	Methods of constructing Fintech Index	Balaskas et al. (2024), Xia et al. (2024), Zhang et al. (2024)

1) Fintech indexes for investor support (DA1)

DA1 brings together robust investment strategy content, providing a comprehensive understanding of these external factors and their potential influence on different asset classes. By measuring the reach and adoption of a Fintech platform within its target market, investors can gauge the solution's ability to gain a foothold and scale its operations. Researchers focus on portfolio measurement indicators and the level of effectiveness they bring. Types of investments that are currently being focused on in the Fintech industry are Fintech companies, green bonds, and cryptocurrencies. Besides understanding the efficiency of the fintech market using constructed indicators, finding the risk spillovers between various financial assets is also a topic of interest.

2) Fintech index for risks identification (DA2)

The complex and interconnected nature of Fintech necessitates a more rigorous and data-driven approach toward risk management. Quantitative risk management methodologies provide a framework for measuring and analyzing risks more precisely than qualitative assessment. The development of advanced technologies is fueling the adoption of quantitative risk management in Fintech, such as Big Data Analytics, Neural Networks, and Text Mining. Research articles in DA2 often focus on two main risk subjects: financial technology companies and traditional banks. These sectors are particularly exposed to operational risks stemming from their reliance on technology and data, credit risks associated with digital lending, regulatory risks due to the evolving regulatory landscape, and reputational risks that can arise from fraud or data breaches.

3) The measurement of financial stability (DA3)

Evaluating the impact of Fintech on the stability and growth of various economic sectors is a crucial prerequisite for its widespread adoption and fostering a supportive ecosystem. One such critical sector is the banking industry, where research has focused on the efficiency and performance of banks within the context of the Fintech landscape. Topic DA3, specifically, will investigate the relationship between Fintech and banking by analyzing key economic variables such as liquidity, environmental, social, and governance (ESG) performance, market capitalization, and operational efficiency.

4) Assessing Fintech's Environmental Sustainability (DA4)

While its potential to enhance financial inclusion and efficiency is undeniable, its impact on natural resources and energy consumption presents a complex picture. Fintech offers a potential double win for resource conservation. Some metrics for this index include: the amount of fuel consumed by a company/transaction, the amount of E-waste generated for Fintech activities, the environmental costs of the organization... Developing standardized frameworks for measuring Fintech's environmental footprint is necessary for consistent comparisons across different regions and sectors, however this may hinder some challenges due to limited data access, technology ability.

Methods of constructing Fintech Index

To comprehensively understand the complex relationship between Fintech and other factors, researchers require a diverse toolkit of computational techniques and research methodologies. Computational techniques like user perception models (e.g., TAM), pattern recognition (e.g., neural networks), and resource optimization (e.g., genetic algorithms) can be combined to explore how user adoption of Fintech impacts resource use, identify hidden patterns linking Fintech to external impact.

3.3.2. Fintech inclusion index

Table 3. Interpreted Topics of Fintech inclusion index

Topic ID	Frequently used terms	Interpret Topic Label	Representative Reference
Fintech inclusion index	I1 fintech, study, payment, level, finding, explore, result, improve, investigate, relationship	The measurement of Fintech technology diffusion across social segments	Chen et al. (2022), Banna et al. (2021), Ioannou et al. (2022)
	I2 index, country, market, global, growth, high, service, investment, research, access	Fintech inclusion index in developing countries	Loo (2019), Rafiuddin et al. (2023), Lauvrinenko et al. (2023)
	I3 financial, inclusion, bank, indicator, datum, policy, measure, system, include, develop	The measurement of financial literacy	The World Bank (2023), Asgari et al. (2023), Zheng and Rahman et al. (2023)
	I4 development, digital, show, finance, region, inclusive, economy, spatial, method, difference	Statistical Tools for analyzing Fintech Inclusion status	Yu et al. (2023), Dong et al. (2022), Moro-Visconti et al. (2020)
	I5 financial, technology, effect, innovation, impact, household, positive, heterogeneity, regulation, province	Effectiveness measurement of inclusion ability of technological innovation	Zheng and Wang et al. (2023), Ye et al. (2022), Chen et al. (2023)

1) The measurement of Fintech technology diffusion across social segments (I1)

Examining the relationship between Fintech products and services and various consumer segments' satisfaction necessitates a multi-pronged approach utilizing a diverse set of metrics. Transaction data, when fed into analytical models, can unearth usage patterns across social segments, highlighting the specific services preferred by different populations. To assess affordability and inclusivity across income levels, pricing structures, and fees should be analyzed. By comprehensively evaluating these metrics, topic I1 provides a deeper

understanding of Fintech adoption and satisfaction across various societal segments, informing initiatives that bridge the digital divide and promote equitable access to the financial opportunities offered by Fintech.

2) Fintech inclusion index in developing countries (I2)

The example of developing countries' transition from traditional industries to advanced manufacturing and services requires new, inclusive growth models to ensure long-term economic sustainability. Topic I2 would examine the adoption of digital payment systems, such as mobile wallets and e-commerce platforms, which are essential for facilitating cashless transactions and integrating people into the formal financial system. To gauge the effectiveness of Fintech in reaching the underprivileged population, the index would assess the availability and accessibility of Fintech products specifically designed for these segments. Some studies' models would focus on the regulatory framework governing Fintech activities, looking for aspects like clarity, transparency, and support for responsible innovation. The topic indicates Fintech can strengthen linkages with other sectors, fostering economic growth and addressing issues like financial inclusion.

3) The measurement of financial literacy (I3)

Financial literacy is a crucial component of financial well-being. Topic I3 gathers indicators covering various payment instruments and access channels. This approach reflects the multi-dimensional nature of financial inclusion, which is measured by considering access, usage, and quality. In the context of leveraging Fintech advancements to empower underserved populations, the role of government and regulatory bodies becomes particularly crucial. The rising focus is on countries grappling with underdeveloped financial sectors or low levels of financial inclusion. By strategically utilizing Fintech, policymakers can enhance the effectiveness of their initiatives aimed at fostering financial development.

4) Statistical Tools for analyzing Fintech Inclusion status (I4)

The topic I4 shows a trend on methods used in acknowledging the positive impact of market-based financial structures on fostering technological innovation, especially in China. To analyze disparities and convergence trends in the region, the research applies many different statistical tools and regression analysis, cluster analysis, propensity score matching, time series analysis, and machine learning techniques being applied in the constructing Inclusion index process. Further explorations and combinations of diverse and optimal methods are advised in the topic I4 cluster.

5) Measurement of inclusion via technology infrastructure (I5)

The topic I5 content cluster focuses on the ability to reduce the integration gap in terms of using Fintech products and services. Factors promoting accessibility may include financial structure, Fintech infrastructure, and policies promoting national Fintech activities. The studies do not only focus on individuals or households but also include small and medium-sized enterprises. The topic offers valuable insights for

policymakers and practitioners seeking to leverage these forces for economic development and poverty reduction.

4. Recommendation and Conclusion

This study proposes a novel text-mining-based framework for streamlined Systematic Literature Reviews (SLRs). Our approach retrieves relevant publications (n=168) on Fintech Indices and utilizes text mining for keyword extraction, data pre-processing, and content clustering. NLP techniques (TF-IDF, SVM, Topic Modeling) then facilitate classification and in-depth analysis with two key indicator groups: (1) Fintech Development & Adoption and (2) Fintech Inclusion. This framework expedites the SLR process (completed in 2 months with 3 researchers) compared to traditional methods (6 months-1 year).

Both show a rising trend in publications from reputable sources, increasingly focusing on Fintech indices. Group (1) explores investor support indices, risk identification indices, and financial stability measurement, emphasizing building a sustainable Fintech ecosystem with minimized risk. Group (2) tackles fintech diffusion in society, addressing developing countries and financial literacy, highlighting efforts to bridge the gap and extend Fintech benefits beyond the immediate ecosystem, promoting financial inclusion and societal well-being. This two-pronged approach suggests Fintech's potential to evolve from an economic tool to a driver of broader financial inclusion.

While the absolute number of articles remains modest, a temporal trend of growth is evident, with reputable publications demonstrating a rising volume of Fintech index related content. For group (1), we divide it into main topics of interest: Fintech indexes for investor support, Fintech indexes for risk identification, the measurement of financial stability. Research within this cluster appears geared towards establishing a sustainable Fintech ecosystem with minimized risk exposure for its participants. For group (2), the results clearly concern the key issues: Fintech Diffusion Across Society, Developing Countries, Financial Literacy. Indicators exploited in this aspect grow as a notice for strengthening forces and measures to support subjects outside the ecosystem so that they can also access the achievements of Fintech. The emergence of these themes underscores the growing emphasis on extending the benefits of Fintech beyond the immediate ecosystem. By bridging the knowledge gap between different societal segments, this theme promotes a holistic development of the Fintech environment through increased accessibility and demand. Overall, these highlight a growing emphasis on building a robust and accessible Fintech ecosystem that minimizes risk for participants while extending its benefits to a wider range of society. This two-pronged approach suggests a future where Fintech becomes not just an economic tool, but a driver of broader financial inclusion and societal well-being. Although these findings provide a foundation for further exploration and indicator development, limitations exist. The current study encountered accessibility challenges and limitations in available techniques for extracting and analyzing detailed index models from the full text of articles. Future research in this area could potentially enhance the Systematic Literature Reviews (SLRs) methodology by incorporating more sophisticated techniques for comprehensive data retrieval and analysis. This would allow for the inclusion of a broader

range of Fintech index studies, ultimately contributing to the widespread dissemination of knowledge and attracting further research efforts to advance the field of Fintech as a whole.

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