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FinTech and Cryptocurrency: An Extensive Review of Developments, Advantages, Merits, Challenges, and Future Trajectories in the Financial Sector

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Abstract: Financial institutions work very hard to make finance smarter in the present global trend to reap the rewards of digitization. To enhance client services, financial technology (FinTech) leverages a range of modern, disruptive technologies, including cryptocurrency, blockchain, the metaverse, artificial intelligence, and the Internet of Things (IoT), among others, in the financial sector. However, the development of disruptive financial products and the creation of an ecosystem of technologies that support them are still necessary. As a result, various tech giants have concentrated their efforts on fintech to develop Information and Communication Technology (ICT) solutions. The objectives of this study are to assess the current state of the art in FinTech and cryptocurrency research, identify research gaps in the field, and examine trends and challenges for prospective future research. This study's findings offer a theoretical framework for information systems-based fintech research, including the definition and advancement of related technical concepts.

Keywords: Cryptocurrency and Blockchain; Metaverse and Artificial Intelligence (AI); Internet of Things (IoT); Disruptive Technologies; Financial Institutions; Information and Communication Technology (ICT); Client Services.

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1. Introduction

Fintech was an innovative financial corporate technology that assisted people in handling their finances safely. It was described as "any new concepts that enhance financial operations and services by offering technological remedies as per varied company scenarios," as said by Leong and Sung [35]. In 2008, the company initially advanced its online banking technology to include digital and mobile solutions, driving growth. Incorporation into the digital process, particularly through online networking sites, public platforms, intelligent systems, and large-scale analytical tools, was a hallmark of this growth. Numerous standard financial firms, such as banking institutions, are being challenged to adopt more viable business strategies and outcomes. Furthermore, they saw the opportunity to enter the banking sector. This study focuses on two categories of start-ups: e-commerce and financial technology (fintech). Fintech, powered by economic cooperation, legislation, politics, and informatics, was among the most significant breakthroughs in business. Fintech's business strategy, including that of banking, was centered

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on transaction and lending operations. Individual economic counseling services, crowdsourcing, cryptocurrencies, and protection (e.g., internet protection) are also included.

The perception of fintech was investigated by Zavolokina et al. [38]. In contrast to start-ups (commercial banking businesses from outside banks), the term "fintech" focuses on the deployment of digital technologies in the fields of finance, integration, and digital innovation. Services providers, crowdsourcing, payments, lending, investment management, and financial markets are six fintech business practices. Clearly, the higher the degree of growth of accounting digital solutions, the more difficult it is for firms to compete. Systemic risk, loan defaults, and adverse selection have all sparked debate in communities, for example, internet loan services. Money laundering involving cryptocurrency has also garnered significant attention. As a result, authorities must determine how to address this development in the regulations. Authorities promote financial industry innovations and utilize customer safety and regulatory compliance standards to ensure that business services are safe and compliant.

In 1945, technological improvements in the banking industry introduced the cheque and payment process system to customers. The Bank of America initially issued its credit card to customers in 1958. Additionally, in 1967, ATMs were introduced for money transactions, utilizing debit cards to facilitate a quick and customer-satisfying process. Internet banking was introduced in the 1990s, aided by the advent of the Internet. In 2000, they established the initial stage of Fintech innovations, including mobile banking and crowdsourcing. They also demonstrated that financial technology was used in business and education to drive rapid growth. A literature review was important to study the improved academics', industry actors,' and regulators' understanding of the fintech sector's development. The goals of this study are to (1) establish the current status of the technologies implemented, (2) find the research gaps in the new technology, and (3) identify the problems and solutions for the next generation. To achieve these goals, a comprehensive literature review was employed.

Moral hazards, delinquencies, and asymmetric information are all issues that have arisen as a result of the growth of fintech. The metadata process requires Kitchenham's systematic literature survey (SLR) approach. Analysis and classification were performed using the journal process flow and resource retrieval. Suryono et al. [53] conducted a study to investigate the advancements of peer-to-peer (P2P) lending that utilizes the SLR technique. Specialists confirmed the findings of this investigation. A virtual currency that utilizes cryptography or blockchain technology is used as a means of exchange. Cryptography was used to secure and confirm transactions. Its primary distinguishing features are cheap transaction costs, the absence of a third party, simplicity, ease of trade, and security (secrecy). Bitcoin was the first digital currency to gain widespread acceptance. There are other Cryptocurrencies available today that use Blockchain technology to operate; nevertheless, from its inception in 2008, Bitcoin has led and advanced other cryptocurrencies. Bitcoin has become the most popular cryptocurrency, with a price comparable to that of electronic cash.

Financial Technology amalgamation and Cryptocurrencies have revolutionized the financial sector landscape, ushering in a new era of disruption, innovation, and paradigm shifts. This revolution meticulously analyzes the multifaceted developments that explore the challenges, future trends, and merits arising from the convergence of disruptive forces within the finance domain. In recent years, the financial industry has undergone a significant transformation, primarily driven by Fintech solutions and the emergence of cryptocurrencies. Leveraging cutting-edge technologies, such as Blockchain, Artificial Intelligence, and the Internet of Things, has propelled financial institutions towards increased operational efficiency, unprecedented access, and customer-centric services that enable access to financial products and services. The advent of cryptocurrencies, anchored by blockchain technology, introduced decentralized financial ecosystems, challenged traditional financial systems, and paved the way for novel transactional paradigms and digital assets. This review examines the multifaceted benefits brought about by the integration of Cryptocurrencies and Fintech within the financial sector. It explores how the advancements of these technologies have democratized financial services, fostering financial inclusion among the unbanked population, enabling seamless cross-border transactions, and providing access to innovative investment opportunities. Moreover, the study will scrutinize the impact of transformative fintech and cryptocurrencies on traditional banking structures, regulatory landscapes, and risk management frameworks, highlighting the strides made despite the challenges faced in their implementation and adoption.

However, most of the tangible advantages come with a host of problems and complexities that require careful consideration and evaluation. The review will cautiously analyze the problems introduced by ambiguous guidelines, security flaws, scalability issues, and the ethical dilemmas related to client protection and data privacy. Additionally, it seeks to investigate the challenges faced by start-ups and financial institutions in utilizing that disruptive technology to the fullest extent possible while retaining compliance with changing regulatory frameworks. This study aims to forecast and examine potential future trends that may impact the development of FinTech and cryptocurrencies within the financial industry. It seeks to predict how price structures will change over time, how decentralized finance (DeFi) will evolve, how AI and gadget learning might be integrated into financial offerings, and how new virtual currencies will perform. In doing so, this paper aims to offer an insightful analysis and a comprehensive understanding of the dynamic environment driving the simultaneous growth of FinTech and cryptocurrencies in the financial industry.

2. Literature Review- Theoretical Background

Goldstein et al. [29] stated that FinTech, or financial technology, has disrupted nearly every aspect of the banking system and is currently transforming the entire finance industry. Allison et al. [61] encompass a variety of uses, including cryptocurrencies, digital money, market finance, digital generation, cryptographic protocols, and even distributed independent organizations. It was driven by start-ups and technological corporations, as noted by Yu et al. [58].

2.1. Impacts of Financial Technologies

Stanko et al. [41] noted that FinTech has increasingly stimulated the interest of professionals, speculators, and authorities. Still, many experts and academics are also interested in learning more about how these innovative technologies and innovations affect enterprises or the broader economic sector. The Libra Association [65] reported that technological breakthroughs are being progressively integrated into everyday life, acclimating individuals to a virtual context that offers long-term and positive benefits while also helping businesses gain core competitiveness. Chong et al. [6] contributed to reducing expenses, expanding client reach, and more effective risk management. Several significant emerging fields in FinTech, including artificial intelligence (AI), blockchain, and fundraising, were explored through theoretical and practical studies in this special issue, as well as the social effects of FinTech on shared prosperity.

Blanche et al. [14] examined how Artificial Intelligence (AI) is widely recognized as a fundamental innovation with the potential to transform nearly all aspects of the financial sector, including consumer credit, customer relations, automation consulting, competitive analysis, and even identity verification. D'Acunto et al. [21] utilized identity processes to surpass traditional methods. As a result, they hold considerable promise for reorganizing management, stimulating market expansion, generating new revenue streams, and even enhancing the efficacy of legislation. It is believed that working in areas of software that provide specific clients with AI-diversified guidance has a range of effects on their outcomes, varying in degrees of expertise, while also reducing a set of cognitive factors for all participants.

Fintech has substantially transformed the financial sector's landscape, revolutionizing the way financial services are accessed, experienced, and delivered. Numerous previous studies have extensively highlighted the impacts of multifaceted fintech across various domains within the financial industry. Lee and Shin studied how the adoption of fintech has been significantly enhanced by financial inclusion, which provides access to previously underserved or unbanked populations. The financial services digitization through mobile banking apps, innovative payment solutions, and peer-to-peer lending platforms has extended access to finance, empowering individuals in remote regions and businesses with essential financial tools. Additionally, a report by PeC [2003] has revolutionized FinTech for the customer experience by offering personalized and user-friendly interfaces, which have improved customer engagement and satisfaction levels. This evolution of customer-centric services has compelled traditional financial institutions to recalibrate their strategies, emphasizing agility and customer-centricity to remain competitive in the market.

Furthermore, research aided by Gai et al. [33] highlighted the disruptive nature of blockchain technology as an essential element of many FinTech packages and its potential to transform existing financial institutions completely. Due to its decentralized structure and robust security features, blockchain technology has made transaction records transparent and immutable, thereby enhancing performance and confidence across various financial sectors. Davis et al. [8] study also emphasized the benefits of AI and device-learning algorithms in enhancing risk assessment, fraud detection, and investment strategies in the financial industry. Financial establishments can also now mitigate risks, provide customized financial services and products to meet evolving consumer expectations, and streamline operations thanks to this technology. Nonetheless, lecturers like Greenberg and Mollick [30] issued a warning regarding capacity difficulties, including unclear regulations, cybersecurity dangers, and moral dilemmas.

2.2. Fintech using Blockchain Technology

Goldstein et al. [29] studied blockchain technology as an emerging platform-like system used for various purposes, including cash transactions, charity events, and others. Blockchain technology has been frequently utilized in the financial sector, particularly in bank transfers, distributed systems, and asset digitization. Tapscott and Tapscott [16] explained that the blockchain was displaced and regulated by investment intermediaries due to its infallibility. Its advantages were identified across several financial industries, including banking, international loan repayments, and markets, as well as laws, by Chong et al. [6]. In recent decades, crowdfunding has gained popularity as a unique conduit for fresh venture financing, particularly for start-ups and socially responsible companies [30].

Kleemann et al. [23] noted that individuals can be assets through crowdsourcing, such as through job listings on virtual networking platforms and capital markets. It facilitates data exchange with both sponsors and aspiring entrepreneurs, including

the financing procedures between business owners [26]. Across many nations, including China and India, the use of fintech for comprehensive banking practices is commonplace, promoting existing health, safety, and economic progress. Understanding the link between FinTech and capital markets is crucial; however, there is a limited amount of scholarly evidence available. The study of how culture and consumers perceive FinTech, as well as the methods by which FinTech impacts economic growth, contributes to the collection of information about the range and outcomes of FinTech operations. Their request seeking articles for that special issue on "Economic Innovations: Machine Learning, Blockchain, and Crowdfunding" was issued in February 2018, and all edited and reposted contributions were approved by mid-July 2019. They discovered here that special issues contributed to the latest research in various ways after evaluating all of the approved pieces. It provides comprehensive academic and practical insights into how various businesses adopt FinTech tools and technologies, as well as the benefits they create.

The integration of blockchain technology within the FinTech landscape has spurred numerous studies that reflect the potential transformation of this sector. Nakamoto introduced blockchain as the underlying technology of Bitcoin, highlighting its decentralization, immutability, and transparency in a ledger system. Additionally, explained the broader applications of blockchain, including its potential to revolutionize not only the currency but also various other areas. The core characteristics of blockchain, including cryptographic security, decentralization, and other mechanisms and consequences, have propelled its application beyond cryptocurrencies. Tapscott and Tapscott [16] further studied the impact of blockchain in redefining the financial infrastructure. They emphasized how its tamper-evident disbursed ledger can simplify processes, reduce prices, and improve transparency. Furthermore, the possibilities provided by using clarification of Smart Contracts created pathways for self-executing, programmable contracts on the blockchain, automating complex financial transactions, and reducing the need for intermediaries.

In addition, Brownsword [51] investigated how Blockchain in FinTech is democratizing. It defined how the unbanked and underbanked, especially in developing international locations, can access financial services through blockchain technology, which promotes economic inclusion. Peer-to-peer transactions and microfinance efforts are made viable through the decentralized structure of blockchain, which lowers access barriers and encourages economic access. Furthermore, Huang and Zhao [62] emphasized the growth of blockchain-based, decentralized finance (DeFi) applications that offer lending, borrowing, and asset management without the need for traditional intermediaries. Coeckelbergh [43] and various students have expressed concerns regarding the scalability, regulatory compliance, and environmental impact of power-in-depth mining in blockchain-based FinTech applications despite the technology's stated capabilities. These challenges must be addressed for the generation to be widely followed and sustainable.

2.3. Recent knowledge of emerging FinTech

Chen et al. [39] explained that FinTech and the emergence of Digital innovations worldwide are relatively new in comparison to the established financial sector and business strategies of industrial and banking firms. The collective expertise in the field was always small. Thus, researchers compiled a list of important additions to provide a bird's-eye perspective on existing policies formed through interaction on major FinTech study topics, including robot advisory, blockchain, and fundraising, among others. Chen et al. [39] questioned the funding in the FinTech sector and its role in driving the current wave of technological change. It compiled a vast and unique collection of released technology invention claims from 2003 to 2017, as well as a variety of key statistics concerning Fintech solutions. Initially, their findings indicate that openly mentioned businesses have driven only a small percentage of FinTech breakthroughs too far. Second, big enterprises and non-firm personnel are responsible for around 62.7 percent of technology invention submissions. In that final, around 57.8 percent of the larger companies come from companies that are not in the banking business.

D'Acunto et al. [21] stated that the application of AI in the banking sector began as a competitive strategy to deter potential entry, and intelligent virtual assistants were considered a way to assist consumers who were unable to be served by traditional advisors. For example, automated financial services often utilize repeatable procedures based on financial theory, leverage technology to reduce and expedite client communication in many cases, and are more accessible than traditional planners. Automated finances were chastised for a lack of personnel, inciting overtrading, and failing to transfer into improved asset returns. The ability of Bitcoin to transform the way transaction clearance and consumer credit platforms function in banking, and it stimulated the establishment of "multi-center-and-weakly-intermediated" situations, has been thoroughly reported throughout contemporary research.

Cong and He [37] examined blockchain technology in the context of agreements, finding that fragmentation affects decision efficiency and that the fundamental characteristics of blockchain transform business location and the competitive environment. They discovered that financial intermediaries reduce the information gap and also increase utility and total revenue through increased entry and competitiveness. Chong et al. [6] established that the classification of matching technology was applied to digitized marketing, adding information to every enterprise model's future growth rationale or real investment technique by

examining five enterprises across mainland China that have implemented blockchain projects. They also highlight the difficulties in adopting all of those digitized corporate strategies. Numerous commercial businesses have emerged in response to the enormous success of cryptocurrency facilitated by blockchain technology, including digital payments and global transfers. Following Nakamoto's creation of Bitcoin in 2008, a significant amount of information has been gathered from clients and consumers, and the media has collected data from researchers such as Cheah and Fry [20] and Foley et al. [55]. Unfortunately, the solid evidence of the technology system was also never effective in providing a novel expense mechanism for making payments, and its cooperation often involves numerous solutions at times [7].

Biais et al. [7] investigated the mechanics of a blockchain and provided real evidence that the blockchain method was never consistently effective in preventing splits. They modeled the verification blockchain protocols as a probabilistic competition and examined various optimal tactics of both sensible and opportunistic miners. They explain that data latency resulting from technology updates can cause forks in blockchain networks, such as cryptocurrencies, leading to abandoned transactions and permanent dispersion across different chains. Additionally, conflicts can potentially be caused by data delays and security updates. They also found harmful consequences, implying that the equilibrium computer resource expenditure was high. As a result, the risks of blockchain technologies in trades were not always preventable.

2.4. Cryptocurrency Transformation

Lin et al. [13] stated that the initial prominent users using Digital currencies were enterprises seeking characteristics not widely accessible through other choices, such as increased secrecy and the lack of restrictions governing what was purchased or traded. According to Foley et al. [55], cryptocurrencies are facilitating “dark e-commerce” and are currently transforming black market economics. They were working on ways to measure and describe the unlawful transactions made possible using Cashless Currency. It was discovered that a Cryptocurrency client using Digital currencies was linked to criminal activities. Although the criminal portion of Bitcoin activities has decreased over time, Bitcoin still accounts for roughly $72 billion in criminal conduct each year, comparable to the size of European and American illegal substance industries. Their research contributes to a deeper understanding of the origin and scope of a “crisis” that an uncontrolled cryptocurrency industry was experiencing, as well as the impact of the upcoming regulatory structure and technological progress on FinTech marketplaces.

Griffin and Shams [31] investigate how a type of virtual currency was used to impact the values of Bitcoins and other cryptocurrencies during the current market rise, and they find evidence to substantiate their theory. Crowdfunding has likely expanded the instruments available for new venture financing, which has also contributed to the volatility of different funding platforms. Management and virtual communities are combined in the crowdfunding investment process. According to Calic and Mosakowski [27], nonprofit organizations face a greater disadvantage when it comes to obtaining resources from financial institutions than when making loans. They demonstrate that crowdfunding has evolved into a cohesive team-based approach to meet the requirements of young enterprises and other businesses with limited access to essential forms of financing and that FinTech, like crowdfunding, generates beneficial effects. Buttice et al. [67] noted that Professional opinion, homophily, language style, and social status are among the characteristics that contribute to effective advertisements, as observed in expanding research by researchers such as Greenberg and Mollick [30] and Colombo et al. [44].

Parhankangas and Renko [5] found that existing networks had a significant impact on the outcomes of crowdfunding campaigns. Davis et al. [8] employ two different research methods with 104 respondents in a rewarded crowdsourcing system to explore the impact of the originality of such crowdsourcing development on their financial decisions and to validate their theoretical design. According to the findings, the strong emotive reactions of potential supporters to assessed technology development are favorably associated with crowdsourcing performance. More crucially, their findings show that the mediating role of brand originality was influenced by highly enthusiastic financiers, who viewed an inventor with an entrepreneurial orientation as seeking to enhance the favorable character of the indirect effect.

2.5. Using Crowdfunding Platforms

Fundraising has become an increasingly popular financing avenue for pioneering businesses in the field of technological innovation. According to Ordanini et al. [4], today's crowdfunding campaign clients exhibit a unique function as consumers, combining their funds to invest in equity crowdfunding. Allison et al. [61] drew on the perspectives of consumer satisfaction theory and innovation diffusion theory, defining the benefits of crowdsourcing as merchants influencing buyers to make purchasing decisions. According to Stanko and Henard [40], financiers of equity funding play a significant role in technology discussions, and crowdfunding is regarded as one type of accessible pursuit in which funders contribute to creating awareness for the crowdsourced good or service, thereby becoming the fastest adopters. As a result, these backers and investors were typically more significant than the early adopters. Because the breakdown charge of resource campaigns was frequently elevated, at about 60%, there is a significant rise, mostly in research, to help comprehend all aspects that contribute to a campaign's performance.

Kuppuswamy and Bayus [68] investigated the effect of crowdfunding, which is important for consumers to maintain fundraising initiatives economically, and they believe their donation should have a positive impact. Parhankangas and Renko [5] examine the language style of crowdsourcing proposals, which correlates with fundraising achievement. They demonstrate that language patterns make projects and their creators more accessible and relevant to the public, thereby aiding in enhancing the performance of societal efforts, despite having little effect on the profitability of projects, as shown by a study of 656 Crowdfunding initiatives. Roma et al. [50] look into several technological initiatives that have been funded through Crowdfunding platforms. Their research shows that committing a greater sum of funds in crowdfunding should attract the interest of expert supporters and win further financing, but that prevailing attitudes were primarily effective once accompanied by inventions or a significant part of social relationships.

3. Methodology

They proceeded with an SLR to create the primary problem to explore. The notion of existing literature was commonly used in knowledge management. It was beneficial in establishing the advancements of a proposed study, such as "fintech or financial technology," within the framework of "dynamics, difficulties, acceptance, creativity, and constraints," which was connected to the Systematic Literature Review (SLR). We launched the intervening area to gather data on a variety of fintech topics, including company-operated types, financing, and capital. The key terms were employed to identify existing research.

3.1. Inclusion and Exclusion Criteria

3.1.1. Inclusion Criteria

Relevance to the research topic and objectives regarding Financial Technologies (FinTech) and Blockchain applications in the financial sector. Studies published in peer-reviewed journals or academic publications focusing on empirical research, case studies, theoretical frameworks, or comprehensive reviews.

3.1.2. Exclusion Criteria

Studies not available in English or lacking accessibility for review and analysis. Sources with insufficient credibility or lacking methodological rigor, such as non-peer-reviewed articles, opinion pieces, or outdated publications beyond a specified timeframe. To reduce the uncertainty of relevant articles, the scope and limitations were established, including the selection of academic journals and studies published in English while excluding articles written in Spanish and Mandarin. Then, publications that matched their subject query were selected, and duplicates were removed. Mendeley's software was utilized to arrange relevant papers in this study. Figure 1 depicts the process.

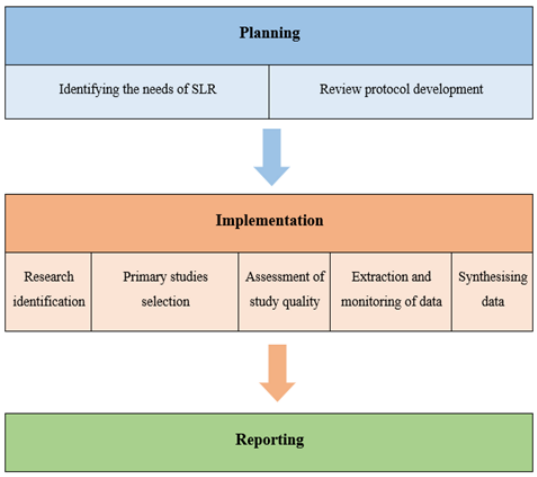

Figure 1: SLR methodology

Collected data and pattern discovery were performed, and the finalized documents were acquired. Figure 2 illustrates the content selection process, which began with the choice of topic and synopsis and progressed to full-text identification through meta- and thematic analyses. The findings of the fintech research analysis and processing are discussed in this section. Terminology and history were discussed, along with the methodology and a thorough study of the technical operations within the corporation.

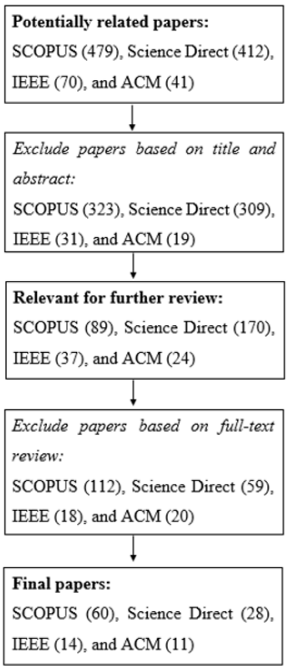

Figure 2: Process of article selection

3.2. Conditions and expressions

Panurach's [49] invention of the ATM was probably a most considerable economic breakthrough. Historically, transmissions have been used to perform commercial transactions since 1838. By enhancing their procedures, the financial sector has leveraged digital technologies, as noted by Nicoletti [9]. The rise of online platforms in Europe and the United States led to a wave of technical improvements across various fields. In such business corporations, analog technologies were turned into digitized ones and introduced in the early 1990s. Development in information and communication technology (ICT) is important for the financial industry. Nakamoto [56], the pseudonym for Nakamoto, invented cryptocurrency, essentially a digital form of virtual cash, in 2008. Chang and Chen [59] explained that Bitcoin is a national cryptocurrency or electronic payment system.

Zavolokina et al. [38] concluded in their systematic literature review that fintech was more than just the utilization of technology in finance. Fintech was alternatively viewed as a set of services, innovations, firms, digitization, industries, the young generation, opportunities, goods, and risks. Gomber et al. [48] noted that fintech is a relatively new term that refers to current interactions, particularly those related to Internet technology (such as mobile internet and cloud computing), as well as economic sector business units. It implies a disturbance to the finance system related to automated processes and increased accessibility of ICT. Financial services offer a range of marketing methods for predicting safety, speed, and development. Gai et al. [33] derived that financial services or products that focus on innovative breakthroughs were referred to as fintech. Fintech is defined as an industry comprising companies that utilize advanced financial technology to deliver swift financial services without the need for lengthy procedures. Fintech encompasses the application of information and communication technology (ICT) in the financial sector, as well as the collaboration between traditional financial institutions and digital financial services providers.

3.3. Analysis

The outcomes of that analysis are discussed in this section. They highlight the fintech themes addressed each year, as well as the broad subjects and marketing strategies of fintech, the primary methodology employed in each study, and the categorization by country. In the publication, papers from the last five years (2016–2021) were chosen. Fintech study was the most extensively studied issue in the papers released every year, according to a review of the stories posted annually (40 articles). Furthermore, in 2016, 22 publications were published in the field of transaction research. Furthermore, studies on P2P lending began to surface in 2019, with a total of 22 publications published. There were 35 financial papers published in 2020. Transfers, regulatory compliance, investing, crowdfunding, market aggregates, peer-to-peer financing, and distributed ledger technology were among the issues discussed. Table 1 illustrates that.

Table 1: Classification of articles based on year

Year	2016	2017	2018	2019	2020	2021	Total
Fintech investigation	1	-	7	4	22	6	40
Payments, clearance, and settlements inquiry	-	3	1	5	9	4	22
Risk assessment and investment studies	3	2	6	-	-	-	11
Marketplace integrator report	1	-	1	-	-	-	2
Crowdsourcing innovation	3	4	-	-	1	2	10
Online Financing Investigation	-	7	2	8	-	5	22
Bitcoin and cryptocurrency academics	-	-	1	-	3	2	6
Total articles	8	16	18	17	35	19	113

3.3.1. Financial Marketing Strategy Segmentation

This section examines the concept of technological viewpoints within the broader context of concerns, including acceptance, issues, trends, challenges, and innovations. The titles, tags, and article contents all show this clustering.

3.3.2. Classification of Methodology

The publications were also examined in terms of the key approaches they employed. Most publications employed an empirical technique that incorporated the use of surveys and archival data. Additionally, 29 publications employed qualitative techniques, including research processes and perspectives on specific events. Additionally, across 21 publications, an acceptance paradigm study was employed to develop a methodological approach. Throughout 9 of the publications, actual research was employed. Over 10 publications, the research involved a literature survey across various financial disciplines. Scientific, theoretical, and simulation studies were also conducted. Table 2 categorizes the papers based on their strategy.

Table 2: Classification of articles by main methodology

Category of Article	Total
Empirical articles using survey data	19
Empirical articles using archival data	14
Literature review	10
Design science	3
Theoretical	7
Simulative	1
Conceptual model	21
Experimental	9
Qualitative (Analysis, Interviews, Case study)	29
Total	113

3.3.3. Article Categorization

Electronic Transactions Advancements activities were released in seven journal articles. The Digital Markets paper was published twice, and the European Business Firm Law Review posted two. Fund Manager and Economic Inventions published four, Publication of Economics authored three, Computer Law and Review Process published one, Industrial Managers and Data Centres authored four, and Study in the Research paper of Designing published three. Five publications from the ACM Conference Held Session Collection, two from Career and Professional Engineering, and Convention Sequence were used in this study. Table 3 shows that the categorization of articles was published.

Table 3: Articles classification

Journal and Proceedings Name	Total
Studies and Innovations in Trade Facilitation	7
Commodities on the Internet	2
Overview of European Business Entity Regulation	2
Economic Technologies and Financial Advisory	4
Survey of Computing Policy and Cybersecurity	3

Corporate Information and Control Systems	1
International Journal of Engineering and Technology, UAE	4
The magazine for Shopping with Digital Operations	3
ACM Academic Conference Session Collection	5
Computer Engineering Career and Professional	2
IOP Conference succession: Geography and Atmospheric Science	5
IOP Conference succession: Materials Science and Engineering	3
Others	72

3.3.4. Geography Categorization

As per the Classified location and the place of the case study, articles were classified by area. The goal of that kind of category was to detect patterns and main problems in a certain place. In contrast to the world, they separated the places into continentals, such as Australia, Africa, America, Europe, and Asia. The Asian Region was ranked top within the fintech study based on the information gathered. They included studies from numerous nations, including the regions, that generated 21 investigations, 18 experiments, and nine surveys, respectively. Every study's research paper cannot be verified with certainty. Research findings were used in 36 different studies. The Asian region provided its most case histories, with 50; notably, Indonesia was the most investigated nation with 20 studies, and China had 16 investigations. Thailand, Korea, Japan, Malaysia, Taiwan, and Singapore were among the various nations that conducted research in response. Moreover, the European region provided ten research papers from England, France, and Ukraine without specifying that nation. In addition, the American region utilized the United States as a research site, with a total of ten papers, along with numerous other locations, including Canada and Brazil. Finally, Africa undertakes very little fintech research, with only a few exceptions, including one notable study.

3.4. Meta-analysis of the Articles Selected

To learn more about any difficulties in the surrounding fintech, they performed a meta-analysis. They have used NVivo software to select the coding, modifying it to fit the study's requirements as per the demands of the questions. The paper examines the analytical problems and developments in the field of technology, as stated mostly in the technique portion of that particular study. Table 4 illustrates the obstacles and research trends, respectively.

Table 4: Challenges in implementing financial technology and control measures

Challenges	Issues
Pattern and structure	1. Creating a financial foundation that is both realistic and methodical.
	2. A thorough description of the digital peer-to-peer financing system is required.
	3. Creation of contextually relevant prototypes.
	4. Create alternative service settings (optional).
	5. Banking is transforming the role of IT, consumption patterns, marketplaces, and laws.
	6. Issues and trends in financial fundraising products.
Governance and Legislation	7. Finance requires a thorough regulatory framework.
	8. Establishment of global regulatory norms.
	9. Legislative changes in information and technology are necessary.
	10. Banking business registration systems have been modified.
	11. Government policy requires efficient national services and a trusted transaction network.
	12. Contracts must include rules on penalties, mediation, and business closure.
	13. The big data era requires marketplace uniformity and transparency.
	14. Financial firms should monitor the performance of new proposals.
	15. Conflicts between government policies and real economic conditions.
	16. Enrollment criteria for the online financial system.
	17. Securities legislation impacts equity crowdfunding.
	18. Reframing the government’s role in promoting regional technology sectors.
Controller	19. Institutional encouragement of innovative fintech.
	20. Governmental sandbox environments for fintech start-ups.
	21. Authorities must safeguard moral standards in financial operations.
Economic Morals	22. Economic morality must follow established guidelines.
Economic Literacy	23. Financial inclusion must be tech-based.

	24. Non-accredited investors lack an understanding of equity crowdfunding performance.
Managerial	25. Need for stronger regulatory oversight by financial authorities.
	26. Oversight of risky peer-to-peer consumer lending.
Security of Personal Information	27. Prevent misuse of personal data.
	28. Big data and social tech raise serious information security concerns.
	29. Blockchain helps authenticate and secure data.
	30. Ensure the protection of online privacy.
Client Defence	31. Building trust in money transfer through data protection.
	32. Use of digital identity in contracts.
	33. Improvement of client service.
Collection Threat Organization	34. Individual investor risk requires tailored strategies.

4. Discussion and Recommendation

4.1. Discussion

Many of the publications were subjected to term mappings. They discovered terms such as fintech, usage, strategy, procedure, financing, hazard, demand, difficulty, acceptance, and investment to utilize the VOS Analyzer program. Figure 3 shows the situation.

4.1.1. Research of Fintech

Coeckelbergh [43] stated that the financial technology exploratory study begins with a review of fintech (which includes machine and investment funds), as well as the moral and social implications of automation usage. Fintech is seen as a form of financial technology that contributes positively to the financial sector, as noted by Nomakuchi [63]. Due to the expansion of technologies and their application in the planning and delivery of financial goods, consumer finance surveillance, administration, and control should strive for conformity and accountability to achieve successful financial industry goals [3].

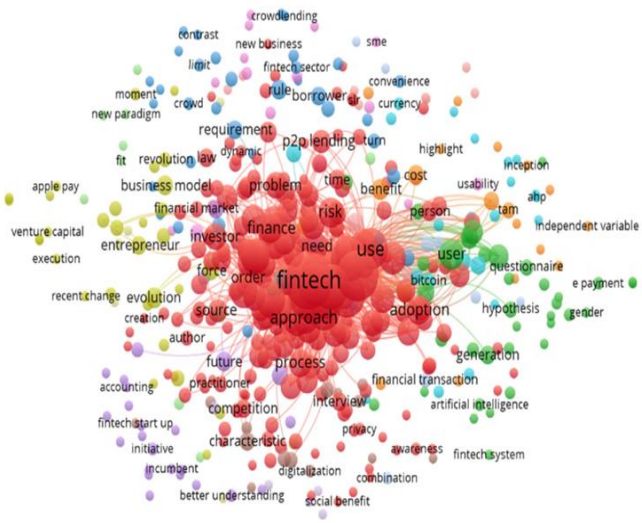

Figure 3: Content analysis outcome for the viewer

Numerous studies have been conducted on online banking adoption from engineering and consumer attitudes perspectives by researchers such as Mathur et al. [46], Fernando and Touriano [17], Ryu [28], Iman [45], and Huei et al. [12]. Fintech's historical perspective, habitats, marketing strategies, and other forms of fintech financing were all identified as exploratory research topics. Kim and Hong [34] described that data safety and confidentiality are essential issues in the development of fintech. Thus, studies have investigated the type of methods for that data approach technique, such as identity verification capabilities. As a result, methods for employing novel financial methods must be established to combine expertise from other nations. Azarenkova et al. [24] explained the means of aiding fintech to continue, and some nations designate finance sector regulators

to create legal runtime environments. This was a small, secure test environment for financial technology firms to evaluate their goods, operations, technologies, and/or marketing strategies.

4.1.2. Research on Transaction Process

Lin et al. [13] development has influenced certain fintech marketing strategies, including the payment system, at this time. Mobile wallets, digital payments, and merchant accounts are examples of recent advancements. Bello and Perez [25] were due to the wide range of payment schemes, money transfer activities, and e-commerce platforms that employ different payment methods. Chang et al. [70] acceptance studies have also dominated this area due to the numerous financing options available. The existing payment method aims to develop and distribute quality customer service across complicated networks using a single system. Ogbanufe and Kim's [47] research described fingerprints within the context of personal safety issues, the advantages obtained, and trust in bank transfers. Furthermore, considering that authorities are having trouble supervising the use of various digital currencies for electronic shopping, it was thought that they threaten the banking markets.

4.1.3. Investigation of Risk Assessment of Investor

Lee [54] stated that customers were using smartphones all over the location. Many personal finance apps are already accessible on smartphones. Users make budget decisions depending on their personal information. Belanche et al. [14] developed a comprehensive expertise framework using AI (artificial intelligence) based on their process, which healthcare firms created to analyze equity holdings and investigate both negative and positive responses to asset management risk. In particular, a study on the uptake of mutual fund services has already been presented.

4.1.4. Research on Market Aggregators

Marketplace analyzers are websites that compile data on various financial services for their customers. Consumers evaluate the finest mutual funds, as well as credit cards, health insurance, and stocks, using this knowledge. A novel model was presented by Liu et al. [71] that utilizes aggregated techniques based on standard deviation to provide a more efficient and precise credit rating.

4.1.5. Investigation of Online Financing System

Maier [19] described the crowdsourcing or peer-to-peer borrowing study as two types of technology studies within the realm of banking. P2P lending and fundraising are both financial ecosystems despite their differing purposes. Such a system helps connect individuals who require financial assistance to those who can provide funds in the form of money or assets. Wonglimpiyarat [32] and Wang et al. [64] derived the two forms of raising funds: compensation and ownership. Individuals who donate to a particular project in the hopes of getting non-monetary incentives, such as products or activities, at an advanced stage, are referred to as merit crowdfunding. Ferreira and Pereira [22] explained that Equity-based crowdsourcing, on either side, functions more like traditional donations in the form of company securities. Another goal of a fundraising site is to persuade the public, particularly potential funders, of the proposed new framework. Asymmetrical knowledge was created, though, due to the increasing amount of equity investment engagement in supporting emerging businesses by Huang and Zhao [62]. Barbi and Mattioli [42] concluded that future studies must focus on reducing informational asymmetries and protecting the market by increasing investor trust. P2P lending is a commercial network that connects lenders and borrowers on a unified system. Suryono et al. [53] examined issues, including adverse selection, that should make it more challenging for the company to facilitate P2P transactions, as well as the use of big data analysis to determine the ratings consumers require.

4.1.6. Research on Cryptocurrency and Blockchain

Dimbean-Creta's [15] future, in which electronic currency is protected by cryptography, is referred to as a cryptocurrency. Bitcoins are a common application of cryptocurrency. “Safe by encryption” denotes the usage of encrypted communication technology on the blockchain. Furthermore, since the blockchain technique was decentralized among various members, the state did not control it. Moreover, blockchain has flaws and vulnerabilities that can be exploited, such as operating outside of federal regulations. Blockchains have four benefits: (1) it is open to all consumers who decide to participate in the dataset; (2) they provide each consumer with a version of millions of items with noticeable notifications; (3) they can be modified for each blockchain using mathematical algorithms; and (4) it makes use of networking technologies.

4.2. Recommendations

They have shown that the rise of fintech publications has captured the interest of academics. Researchers discovered various subjects composed of multiple keywords as a result of our meta-analysis. As a result, they identify three major difficulties and

strategies for overcoming them. Basole and Patel [52] explained that the establishment of a realistic and methodical foundation for fintech was due to its potential. Numerous current studies have attempted to construct comprehensive acceptability patterns by gaining a deeper understanding of the factors that influence a person's right to use online banking. Unfortunately, it is unclear exactly how people used these additional services. Those components, as noted by Fermay et al. [1], are not the primary means of examining market adoption. Public understanding of financial planning, as well as financial backing, should facilitate the efficient operation of the digital payments industry. This was a critical aspect of the engagement of all parties. Finance cannot be considered a disruptor any longer. Effective relationships between technologies and regulators have a significant influence on the preservation of innovative practices, including strong connections among financial service companies, such as finance, which were crucial [53].

Leong et al. [11] were prepared to help with the transformation of the economy. The government must view the banking industry as a key participant in this transformation, for example, by enabling the use of digitized and mobile currencies, as well as their utilization as a financial instrument. The second point to consider was supervision. Loans are one among the many commercial banking models influenced by technology, along with transactions, investment management, and electronic insurance. Peer-to-peer lending is a technology business that is booming worldwide despite the principle not being original. Ivashchenko et al. [2] developed a strategic plan to aid SMEs and consumers in acquiring credit support. Conversely, as a result, numerous unlawful financial contracts have surfaced, undermining financial practices that depend on customer confidence. The technical guideline was approached in various ways. For example, the other nation adopted a directive approach based on its standards and procedures, whereas China employed a positive strategy for developing its unique regulatory system. The commodities regulating framework need not necessarily bring in faster technological progress. Laws and norms are seen as slow and ineffective in the face of the technological revolution.

According to Azarenkova et al. [24], governments must employ a “regulatory sandbox” technique. Authorities and market participants can promote the creation of this enterprise in that field. Financial enterprises should be government-approved and affiliated with approved financial groups. Niu et al. [10] reviewed the online and application interfaces, and the authority must develop a transparent inspection method. Additionally, the authorities should establish a reporting system for unlawful banking activities. Analyzing popular viewpoints using data from network platforms' commenting sections, identifying assessments of payment services, and researching user issues through text analysis, including stress detection, were all interesting approaches.

Brownsword [51] claimed that the use of Big Data, machine intelligence, and supervised learning in the advancement of banking services can be separated from new technical breakthroughs. Due to the complex and far-reaching implications of information usage, businesses have placed a premium on database security. In this regard, security encompasses both technology and data. Customers must be protected by fintech from information leakage and access control limitations, as well as private information security breaches. Abubakar and Handayani [36] concluded that strong laws for confidentiality and privacy are required. Another thing customers should be informed of is internet technology. Customers of advanced devices are required to be digitally literate. Moreover, the banking industry must verify the trustworthiness of financial programs that utilize applications to avoid deception.

5. Conclusion

This literature survey was used as a starting point for further research into fintech. Upcoming projects in the field of computer engineering may focus on AI, including algorithms, methodologies, and approaches for financial systems [60]. Payment gateway or other simple fee structures, for instance, should be developed, and biometrics can be used to secure transactions. The characteristic comparison approach may be utilized for interface loans in P2P financing studies by Yunus [66]. Big data approaches can be used to display financial services, such as those catering to the digital generation. Further study into bitcoin networks or cryptocurrencies was also possible by Du et al. [69]. Abdullah et al. [18] findings of the meta-analysis demonstrate that issues with finance study start with identifying the financial architecture that incorporates concepts and designs tailored to each nation's values. These circumstances have a significant impact on public guidelines and laws. This sector requires broad ideas that must be adapted to technological advancements. As a result, numerous nations have implemented the concept of regulated laboratory incubation (fintech start-up incubation). Fintech requires a significant amount of personal data. Therefore, keeping an eye on the network was also important for consumer safety. The quality of data protection and architecture must be regularly improved on this premise. Kursh and Gold [57] discussed Fintech and Blockchain technology in the context of modernizing information systems, particularly by merging acceptance test models with other learning theories. Interaction across different businesses on the financial business strategy was also conceivable (especially for funding). It's also possible to assess the technology's sophistication and provide both technological and non-technical suggestions. This includes examining the public perception of fintech advancements using online information and continuing to refine reasonable restrictions that are compliant with the financial technology system. Technology must also be integrated into education to prepare prospective employees for the workforce.

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