

# Antecedents and Outcomes of Fintech Adoption Led to Sustainable Performance: A Systematic Literature Review

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## ABSTRACT

The systematic literature review focuses on Fintech adoption and sustainable performance to fill this theoretical research gap in the literature. Adopting the TCCM research design, the study establishes the antecedents, mediators, moderators, and outcomes of Fintech adoption while detailing its sustainability implications. The review integrates 29 peer-reviewed manuscripts from 2019 to 2024, with social influence and performance expectancy. The findings establish Fintech as an important driver of improvement in the sustainability performance of social, economic, and environmental metrics. The identified methodological trends reflect the ongoing dominance of the TAM and UTAUT frameworks. The perceived technological advancements of Fintech and sustainability use the TAM most often because it is associated with technology acceptance. Despite that, the conceptual confusion between Fintech and Fintech adoption is addressed in this study. However, the current study defines areas for future paradigms, such as the moderating role, including new theoretical perspectives, and directions for further research. Together with this knowledge synthesis, the Fintech-based approaches reported in this manuscript enhance the development of academic accounts and applications for attaining sustainability.

**Keywords:** Fintech Adoption, Sustainable Performance, Environmental Performance, Social Performance, Economic Performance, Systematic Literature Review, Future Research Agenda.

## 1. INTRODUCTION

Today's world is experiencing immense growth in technological developments due to concerns about sustainability (Arner et al., 2020; Atayah et al., 2023). In recent years, there have been a few technological developments aimed at addressing sustainability concerns. One example of this convergence of innovative technology and sustainability practices is the rise of financial technologies, known as "Fintech", which has become an upcoming force in the financial industry

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(Hammadi et al., 2019; Arner et al., 2020; Vergara & Agudo, 2021; Atayah et al., 2023; Rambaud & Pascual, 2023). Particularly, "Fintech" refers to using technological innovations to provide users with financial services (Deng et al., 2019; Dwivedi, Alabdooli, & Dwivedi, 2021). In terms of efficiency and consumer experience, Fintech companies perform much better than traditional or old financial institutions. Fintech developments have gone through four stages over time (Arner, Barberis, & Buckley, 2017; Arner, Buckley, Charamba, Sergeev, & Zetsche, 2022). The first stage includes analogue financial services, which are considered a part of Fintech 1.0 (1866-1967). The second stage includes digitization that occurs during Fintech 2.0 (1968-2008), propelled by advancements in digital technologies for communication and transactions. Beginning in 2009, Fintech 3.0 brings with it a great enhancement in advanced economies, such as the use of smartphones, digital cryptocurrencies, and digital services. Finally, Fintech 3.5 anticipates the adoption of these technologies in emerging nations, promoting growth and financial inclusion, and becomes a more attractive field for researchers.

Understanding its enhancement and significance, numerous previous studies have examined Fintech and sustainability from a variety of angles, including the adoption of green banking with sustainability (Tara & Singh, 2019) and the effect of Blockchain in banks (Ji & Tia, 2022). Fintech adoption for green banking disclosure (Bose, Khan, Rashid, & Islam, 2018) and sustainable banking (Yan, Siddik, Yong, Dong, Zheng, & Rahman, 2022). The majority of empirical research, however, has concentrated on discrete or isolated elements (Fintech or sustainability) or both (Guang-Wen & Siddik, 2023; Nenavath, 2022). Gomber, Kauffman, Parker, and Weber (2018) define Fintech as financial technology to enhance the efficiency of financial institutions. However, Chen, Wu, and Yang (2019) define Fintech adoption; there is a difference between Fintech and Fintech adoption. According to Chen et al., users adopt financial technologies and attach them to their daily usage process to enhance the ease of their work and efficiency. Despite that, the body of research on both perspectives of Fintech and sustainability is still fragmented and understudied. As a result, researchers like Ellili (2022) have emphasized the importance of performing review studies to portray Fintech and sustainability from an industry perspective in a comprehensive and sophisticated manner. However, the adoption of these technologies that augment sustainable performance is not well comprehended. Therefore, a comprehensive summary of important concepts and their relationships will act as a guide for further study (Ellili, 2022). As technological advancements are increasing, the adoption of Fintech is also increasing.

Nowadays, technologies are adopted by individuals, so it is necessary for further research to deeply examine the effect of Fintech adoption on sustainable performance. Financial technologies are considered most important for the development and also for the sustainable environment. Meanwhile, financial innovation or technology makes it possible and may lead to new business models,

applications, procedures, or goods that have a significant impact on financial markets, institutions, and the delivery of financial services (Pashang & Weber, 2021). Fintech has attracted a lot of buzz and scholarly attention in recent years (Vergara & Agudo, 2021; Zarrouk et al., 2021). It can also be crucial in achieving SDGs (Deng et al., 2019). After studying the emerging concept of Fintech adoption, the current study conducts a systematic literature review on how Fintech adoption leads to sustainable performance and presents the summarized work of the last six years on this specified topic. This review tries to fill these research gaps in this SLR that employed the Theory-Context-Characteristics-Methodology (TCCM) paradigm introduced by Paul and Rosado-Serrano (2019) to fully grasp the Fintech adoption that leads to sustainable performance. Three main factors led to the selection of the TCCM (framework). To identify this framework, the study should answer the following questions: What are the antecedents and outcomes of adopting Fintech that lead towards sustainable performance (2019-2024)? Which theories support the impact of financial technology adoption on sustainable performance? What are the methodologies that are used in the adoption of Fintech to enhance sustainability? Lastly, to define the future directions for future researchers. The succeeding sections in this paper are organized as follows: the research approach defined in the methodology section; after that in the result section the current paper defines the innovative technology that affects multiple dimensions; gives proof of the discovered connections and describes the connection using a variety of theoretical frameworks. The TCCM approach is defined after the methodology section, which elaborates on the theories, context, and characteristics connected with the technology adoption. In the last section, the practical and policy implications, limitations of this study, and further directions will be discussed.

## **2. LITERATURE REVIEW**

The concept of sustainability originated in the 20th century, and various researchers define it. Publications on "sustainability" have grown significantly over the previous 20 years to the extent that "sustainability science" is mostly viewed as a separate field (Kates et al., 2001; Komiyama & Takeuchi, 2006; Schoolman, Guest, Bush, & Bell, 2012; Kajikawa, Tacoa, & Yamaguchi, 2014). Three related "pillars" are used in one particularly common definition of "sustainability." Authors define it as a 'pillar' (Basiago, 1999; Pope, Annandale, & Morrison-Saunders, 2004; Gibson, 2006; Waas, Hoge, Verbruggen, & Wright, 2011; Schoolman et al., 2012; Moldan et al., 2012; Boyer et al., 2016), many authors describe it as 'dimensions' (Stirling, 1999; Lehtonen, 2004; Mori & Christodoulou, 2012; Carter & Moir, 2012), and it is defined as 'components' by these authors (Pisani, 2006; Zijp et al., 2015). Because of the rise of the Sustainable Development Goals (SDGs) and digital transformation, innovative adoption and sustainability are the main topics of this study. Technology and sustainability are becoming hot topics for governments to guarantee high SDG

compliance as well as for researchers to study the effects of digitization. The previous ten years have seen a significant evolution in financial technologies due to advances in digitalization (Ellili, 2022).

The first academic study on Fintech was conducted in 2015, yet the word "Financial" was first proposed in the early 1990s (Puschmann, 2017). Since 2000, Fintech has gained momentum when the concept of mobile banking was introduced. Financial services were accessible through mobile banking and mobile banking platforms (Ullah & Khan, 2024). The government and SBP (State Bank of Pakistan) have developed many policies to enhance the adoption rate of technologies in Pakistan. This study focused on Fintech adoption, which is somewhat a conceptual confusion between Fintech and the Fintech adoption. There is a difference between the concepts of Fintech and the Adoption of Fintech. The term Fintech is referred to as "Innovative technology", which is utilized to increase the efficiency of financial services by using technology that includes Blockchain and mobile banking. Financial institutions use these technologies with financial services to increase their accessibility (Gomber et al., 2018).

However, the adoption of innovative technologies is defined by Chen et al. (2019); financial institutions and individuals adopt innovative technologies and integrate them with their daily usage services through the factors of ease and trust. Despite that, the current study conducted an SLR on the summarization of the last six years' work that was published on the topic of Fintech adoption towards sustainable performance.

First, it builds the current state of knowledge on the attaining of innovative technology research and their current research focus on top contributing publishers, frequently used keywords like "Fintech", "adoption", "Fintech adoption", "Fintech", and most cited authors; second it outlines theories of a contemporary and historical nature to the organizations and countries that have been involved in Fintech research, major precursors and methods that are most often used. The most frequently studied theories include UTAUT, UTAUT2, TAM, and ecological modernization theory that support the adoption of new and innovative technologies, despite that it is also supported by the previous studies which were conducted by the researchers (Almaqtari et al., 2024; Igamo et al., 2024; Almasghadani et al., 2023; Siddik et al., 2022; Nugraha et al., 2022; Hasan et al., 2021; Setiawan et al., 2021; Singh et al., 2020; Dwivedi et al., 2021). Third, knowledge gaps in the research area and the potential for future research are also shown. Fourth, it identifies research gaps and suggests directions for future inquiry. The current study provides insights into technology adoption. The objective of the existing study is to identify the moderators and mediators that can be studied in Fintech through a systematic literature review. The systematic review of Fintech adoption is based on the 29 scholarly articles whose information has been thoroughly examined to determine the antecedents and outcomes of Fintech adoption.

### **3. METHODOLOGY**

#### **3.1 Research Approach**

The current study aimed to define an integrated framework that encompasses financial technology adoption. To attain this framework, the current study performed a systematic literature review (SLR) since this technique provides a deep analysis of the relevant studies on this topic as well as possessing the ability to identify further untested ideas. Furthermore, using an explicit and systematic methodology to assess a stream of material improves the standards of the evaluation process and results (Tranfield et al., 2003). We applied an inductive research methodology to the final sample of articles for content analysis.

#### **3.2 Description of the Review Process: Data Collection**

Different kinds of databases were utilized for data collection, including Scopus, Google Scholar, and Web of Science. Google Scholar is considered one of the largest databases; however, Web of Science and Scopus are comprehensive databases. For the first search, different keywords and terms were used independently, and Boolean operators like "AND" and "OR" were combined with the keywords "Fintech", "financial technology", "green technology", "Fintech adoption", "Financial technology adoption", "innovative technology adoption".

#### **3.3 Description of the Inclusion Criteria**

For this study to incorporate the identified papers had to meet specific requirements. To perform this systematic literature review, the current study selected articles that were published from 2019 to 2024. Additionally, since these are thought to offer reliable data and hence have the most influence in the area, the publications had to be published in peer-reviewed journals with an impact factor (Podsakoff et al., 2005); however, the articles must be in the English language and contain research related to Fintech adoption.

#### **3.4 Data Extraction Procedure**

The initial step of the sample data included an examination of the irrelevant data. According to this, the abstracts of the articles were evaluated in light of the inclusion criteria. After reviewing the abstract, if it still appeared similar/relevant, the introduction, methodology portion, and discussion sections were then read and concluded, including any impacts of Fintech adoption on the given variables.

A flow chart showing the selection procedure for articles to be included in this review is shown in Figure 1. Step 1 identified 105 articles (Google Scholar: 85; Scopus: 20). In Step 2, the sample was reduced by 10 articles because of duplication. In Step 3, the abstracts of the articles were reviewed according to the criteria; after reviewing, 48 articles were excluded because they were irrelevant to the study. In

Step 4, the introduction, methodology, and discussion sections were reviewed thoroughly according to inclusion criteria, which led to a further 11 articles being excluded because of lower impact factors. In the last step, after the exclusion, 36 articles were found to be relevant to the current study's questions. Moreover, when the final process was determined, 7 articles were removed because they were not specifically relevant to the perspective of Fintech adoption. After this last filter, 29 articles remained that satisfied all inclusion requirements.

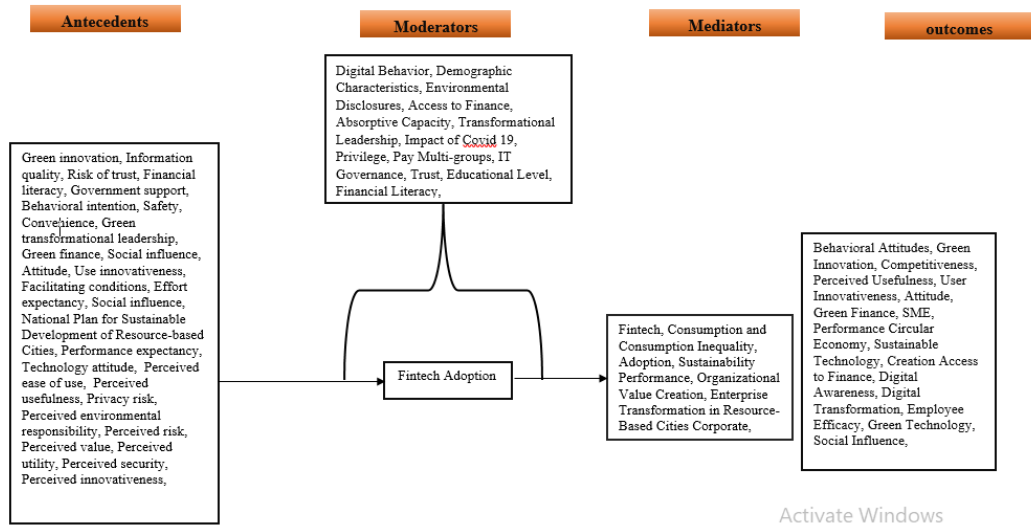


Figure 1. PRISMA Flow Chart — Article Selection Procedure

## 4. FINDINGS

Table 1 Theories used in Fintech Adoption

| Theory                    | Articles (N) | References                                                                                                                                                                                                                |
|---------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UTAUT                     | 7            | Chan et al., (2022); Tariq et al., (2024); Sharma et al., (2024); Almarshhadani et al., (2023); Kurniasari et al., (2023); Xie et al., (2021); Singh et al., (2020).                                                      |
| UTAUT2                    | 2            | Idrees et al., (2024); Hassan et al., (2024).                                                                                                                                                                             |
| TAM                       | 9            | Almaqtari et al., (2024); Igamo et al., (2024); Almarshhadani et al., (2023); Siddik et al., (2022); Nugraha et al., (2022); Hasan et al., (2021); Setiawan et al., (2021); Singh et al., (2020); Dwivedi et al., (2021). |
| TPB                       | 2            | Aggarwal et al. (2023); Liu et al. (2023).                                                                                                                                                                                |
| Resource-based view (RBV) | 1            | Serdarusic et al. (2024).                                                                                                                                                                                                 |

|                                       |   |                                  |
|---------------------------------------|---|----------------------------------|
| Practice-based view (PBV)             | 1 | Hidayat-ur-Rehman et al. (2023). |
| Ecological modernization theory (EMT) | 1 | Siddik et al. (2023).            |
| EMT and AMO theory                    | 1 | Siddik et al. (2023).            |
| Dynamic capabilities theory (DCT)     | 1 | Siddik et al. (2023).            |
| TRA                                   | 1 | Roh et al. (2022).               |
| Macroeconomic theory                  | 1 | Yang et al., (2022).             |

Table 1 describes the theories used in previous studies from 2019 to 2024. The most recommended and studied theory is the Technology Acceptance Model (TAM) which is used in 9 articles: Almaqtari et al. (2024), Igamo et al. (2024), Almashhadani et al. (2023), Siddik et al. (2022), Nugraha et al. (2022), Hasan et al. (2021), Setiawan et al. (2021), Singh et al. (2020), and Dwivedi et al. (2021). These studies show that TAM is the most used study and has a higher effect on technology adoption. However, the second most used theory is the Unified Theory of Acceptance and Use of Technology (UTAUT). The researchers Chan et al. (2022), Tariq et al. (2024), Sharma et al. (2024), Almashhadani et al. (2023), Kurniasari et al. (2023), Xie et al. (2021), and Singh et al. (2020) describe in their studies that UTAUT has a greater effect on innovative technology adoption.

#### 4.1 Characteristics

A construct's characteristics are its constituent parts and how they relate to other relevant factors (Paul, Khatri, & Duggal, 2023). In addition to the results, we include a summary of the domain's antecedents, moderators, and mediators.

**Table 2** *Antecedents of Fintech Adoption*

| Variables              | Article (N) | References                                                                                                                                                                          |
|------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Social influence       | 8           | Almashhadani et al. (2023); Xie et al. (2021); Kurniasari et al. (2023); Hassan et al. (2024); Sharma et al. (2024); Idrees et al. (2024); Chan et al. (2022); Tariq et al. (2024). |
| Performance expectancy | 7           | Xie et al., (2021); Kurniasari et al., (2023); Hassan et al., (2024); Sharma et al., (2024); Idrees et al., (2024); Chan et al., (2022); Tariq et al., (2024).                      |

|                                        |   |                                                                                                                                                                |
|----------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effort expectancy                      | 7 | Xie et al., (2021); Kurniasari et al., (2023); Hassan et al., (2024); Sharma et al., (2024); Idrees et al., (2024); Chan et al., (2022); Tariq et al., (2024). |
| Trust                                  | 5 | Nugraha et al., (2022); Roh et al., (2024); Tariq et al., (2024); Hasan et al., (2021).                                                                        |
| Perceived risk                         | 4 | Almashhadani et al. (2023); Xie et al. (2021); Chan et al. (2022); Tariq et al. (2024).                                                                        |
| Facilitating conditions                | 4 | Tariq et al., (2024); Idrees et al., (2024); Hassan et al., (2024); Xie et al., (2021).                                                                        |
| Financial literacy                     | 4 | Nugraha et al. (2022); Kurniasari et al. (2023); Siddik et al. (2023); Igamo et al. (2024).                                                                    |
| Perceived ease of use                  | 3 | Hasan et al. (2021); Almashhadani et al. (2023); Hasan et al. (2021).                                                                                          |
| Perceived usefulness                   | 3 | Igamo et al., (2024); Hasan et al., (2021); Almashhadani et al., (2023).                                                                                       |
| Government support                     | 2 | Nugraha et al. (2022); Igamo et al. (2024).                                                                                                                    |
| Perceived value                        | 1 | Xie et al. (2021).                                                                                                                                             |
| Safety                                 | 1 | Hasan et al., (2021).                                                                                                                                          |
| Technology attitude                    | 1 | Singh et al. (2020).                                                                                                                                           |
| Green innovation                       | 1 | Liu et al. (2023).                                                                                                                                             |
| Perceived environmental responsibility | 1 | Liu et al. (2023).                                                                                                                                             |
| Green finance                          | 1 | Guang-Wen et al. (2023).                                                                                                                                       |
| Green transformational leadership      | 1 | Siddik et al. (2023).                                                                                                                                          |
| Information quality                    | 1 | Aggarwal et al. (2023).                                                                                                                                        |
| Perceived innovativeness               | 1 | Hassan et al., (2024).                                                                                                                                         |
| Perceived security                     | 1 | Hassan et al., (2024).                                                                                                                                         |
| Convenience                            | 1 | Sharma et al., (2024).                                                                                                                                         |
| Behavioral intention                   | 1 | Sharma et al., (2024).                                                                                                                                         |

In Table 2, the variable represents the core focus of most studies in the sample. The references indicate substantial scholarly interest in understanding the adoption of Fintech technologies across various contexts. Studies like Dwivedi et al. (2021) and Yan et al. (2022) have explored the factors influencing Fintech uptake, while others such as Siddik et al. (2023) and Guang-Wen et al. (2023) have delved into regional or sectoral adoption patterns. Overall, Fintech adoption remains the

central theme in this body of literature, reflecting its importance in the financial technology domain. The table summarizes key determinants influencing Fintech adoption, reflecting a comprehensive blend of factors from social and psychological influences to performance expectations and risk perceptions. The highest number of references associated with Fintech adoption underscores its centrality to the research, while the recurring appearance of social influence (8 articles). The studies by Almashhadani et al. (2023) and Xie et al. (2021) show that social factors play a critical role in encouraging adoption. Performance expectancy (7 articles): key studies like Xie et al. (2021) and Kurniasari et al. (2023) have examined how performance-related expectations influence the decision-making process, suggesting that users are more likely to adopt Fintech. Effort expectancy (7 articles): studies by Xie et al. (2021) and Kurniasari et al. (2023) indicate that Fintech solutions that are user-friendly and require less effort to navigate are more likely to be adopted. This signals that users' perceptions of ease and benefit are pivotal in adopting Fintech technologies. Trust (5 articles): Nugraha et al. (2022) and Roh et al. (2024) have emphasized that users need to trust the technology, the institutions providing the Fintech services, and the security of their data. Risk (4 articles): Tariq et al. (2024) and Hasan et al. (2021) highlight the potential concerns users have regarding the uncertainty or negative consequences associated with Fintech adoption. This analysis helps to structure future research by focusing on these core variables and understanding how they interrelate to impact the Fintech adoption process.

**Table 3** *Outcomes of Fintech Adoption*

| Variables                              | Articles (N) | References                                                                                                                                                                                                                                                            |
|----------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Consumption and consumption inequality | 1            | Yan et al., (2022).                                                                                                                                                                                                                                                   |
| Sustainability performance             | 12           | Dwivedi et al. (2021); Yan et al. (2022); Liu et al. (2023); Kurniasari et al. (2023); Siddik et al. (2023); Tian et al. (2023); Hidayat-ur-Rehman et al. (2023); Almaqtari et al. (2024); Serdariusic et al. (2024); Rehman et al. (2024); Hidayat-ur-Rehman (2024). |
| Corporate carbon emission              | 1            | Wang et al., (2024).                                                                                                                                                                                                                                                  |
| Environmental performance              | 2            | Guang-Wen et al. (2023); Siddik et al. (2023).                                                                                                                                                                                                                        |

Different types of outcomes are defined in Table 3. These articles explore different factors driving the adoption of Fintech, such as technological readiness, trust, ease of use, and social influence, but also delve into sector-specific and region-specific adoption trends. The high number of articles underscores that Fintech adoption is both a broad and complex subject encompassing various contexts and dimensions, which makes it a major focus for researchers. Sustainability

performance is another highly researched area, appearing in 12 articles. This is notable because it connects the Fintech industry with environmental, social, and governance (ESG) concerns, reflecting a growing interest in how Fintech innovations contribute to sustainable business practices. Studies like those by Dwivedi et al. (2021) and Liu et al. (2023) investigate how Fintech can enable or enhance sustainability by promoting efficient resource usage, reducing carbon footprints, or fostering socially responsible investments. The variable "Consumption and Consumption Inequality" referenced by Yan et al. (2022) highlights a more niche area of research. Wang et al. (2024) focus on Fintech's impact on corporate carbon emissions, exploring how Fintech innovations contribute to reducing emissions and promoting environmentally sustainable practice.

**Table 4** *Mediators of Fintech Adoption*

| <b>Variables</b>                          | <b>Articles (N)</b> | <b>References</b>                                                                                                                                                       |
|-------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Behavioral attitudes                      | 2                   | Singh et al. (2020).                                                                                                                                                    |
| Competitiveness                           | 3                   | Dwivedi et al. (2021); Hidayat-ur-Rehman et al. (2023); Rehman et al. (2024).                                                                                           |
| Perceived usefulness                      | 1                   | Nugraha et al. (2022).                                                                                                                                                  |
| User innovativeness                       | 1                   | Nugraha et al. (2022).                                                                                                                                                  |
| Green innovation                          | 3                   | Yan et al. (2022); Guang-Wen et al. (2023); Siddik et al. (2023).                                                                                                       |
| Attitude                                  | 1                   | Roh et al. (2022).                                                                                                                                                      |
| Fintech adoption (FTA)                    | 7                   | Liu et al., (2023); Aggarwal et al., (2023); Almashhadani et al., (2023); Igamo et al., (2024); Serdarusic et al., (2024); Hassan et al., (2024); Tariq et al., (2024). |
| Green finance                             | 3                   | Yan et al. (2022); Liu et al. (2023); Rehman et al. (2024).                                                                                                             |
| SME performance                           | 1                   | Kurniasari et al. (2023).                                                                                                                                               |
| Circular economy                          | 2                   | Siddik et al. (2023); Hidayat-ur-Rehman et al. (2023).                                                                                                                  |
| Access to finance                         | 1                   | Siddik et al. (2023).                                                                                                                                                   |
| Digital awareness, digital transformation | 1                   | Serdarusic et al. (2024).                                                                                                                                               |
| Social influence                          | 1                   | Chan et al., (2022).                                                                                                                                                    |

Table 4 shows that Fintech adoption as a mediator has a stronger influence on the sustainability performance in the presence of other variables. According to these researchers, Liu et al. (2023), Aggarwal et al. (2023), Almashhadani et al. (2023), Igamo et al. (2024), Serdarusic et al. (2024), Hassan et al. (2024), and Tariq et al. (2024), Fintech is playing a crucial role in environmental, social, and economic

performance. The other factors have a lower mediating effect; future researchers can adopt this variable in their model to examine the influence.

**Table 5** *Moderators of Fintech Adoption*

| Variables                                                    | Articles (N) | References                                 |
|--------------------------------------------------------------|--------------|--------------------------------------------|
| Digital behavior/transformation, demographic characteristics | 2            | Singh et al. (2020); Rehman et al. (2024). |
| Access to finance, absorptive capacity                       | 1            | Siddik et al. (2023).                      |
| Transformational leadership                                  | 1            | Hidayat-ur-Rehman et al. (2023).           |
| Impact of COVID-19                                           | 1            | Almashhadani et al. (2023).                |
| Privilege pay                                                | 1            | Aggarwal et al. (2023).                    |
| Multi-groups                                                 | 1            | Igamo et al., (2024).                      |
| IT governance                                                | 1            | Almaqtari et al., (2024).                  |
| Trust                                                        | 1            | Hassan et al., (2024).                     |
| Educational level                                            | 1            | Idrees et al. (2024).                      |
| Financial literacy                                           | 1            | Chan et al., (2022).                       |

Table 5 of this study clearly shows that the moderators are not purposively explored in this topic. The digital innovation variable is rarely used in two studies: Singh et al. (2020) and Rehman et al. (2024). This lower influence of the moderating variable provides a great opportunity for future researchers to utilize the moderating effect in their studies to find out the strength of the moderator in the causal relation.

## 4.2 Context

In a study, "context" refers to the particular circumstances and social or economic environment in which the study is carried out (Lim, Yap, & Makkar, 2021). In addition to outlining the trends of international research collaborations in this field, we categorized the studies under review according to the countries in which they were carried out from 2019-2023. Twenty-one countries were linked to articles about Fintech, technology adoption, and sustainability. China, India, and the United Kingdom were the most productive of these, accounting for 19% and 10% of all publications, respectively. The United Kingdom (5), India (4), China (4), and the United States of America (4) had the most international research collaborations.

**Table 6** *Research Strategies Used in Fintech Adoption*

| Research Strategy                   | Article N | References                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Survey                              | 27        | Singh et al., (2020); Dwivedi et al., (2021); Xie et al., (2021); Roh et al., (2022); Liu et al., (2023); Kurniasari et al., (2023); Setiawan et al., (2021); Hasan et al., (2021); Siddik et al., (2023); Guang-Wen et al., (2023); Tian et al., (2023); Siddik et al., (2023); Hidayat-ur-Rehman et al., (2023); Aggarwal et al., (2023); Almashhadani et al., (2023); Igamo et al., (2024); Almaqtari et al., (2024); Serdarusic et al., (2024); Hassan et al., (2024); Sharma et al., (2024); Idrees et al., (2024); Chan et al., (2022); Tariq et al., (2024); Rehman et al., (2024); Hidayat-ur-Rehman (2024); Nugraha et al., (2022); Siddik et al., (2022). |
| Econometric model                   | 1         | Yan et al., (2022).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| National Tax Survey Database (NTSD) | 1         | Wang et al., (2024).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Table 6 depicts that 27 studies out of 29 used the survey strategy. The following researchers: Singh et al. (2020), Dwivedi et al. (2021), Xie et al. (2021), Roh et al. (2022), Liu et al. (2023), Kurniasari et al. (2023), Setiawan et al. (2021), Hasan et al. (2021), Siddik et al. (2023), Guang-Wen et al. (2023), Tian et al. (2023), Siddik et al. (2023), Hidayat-ur-Rehman et al. (2023), Aggarwal et al. (2023), Almashhadani et al. (2023), Igamo et al. (2024), Almaqtari et al. (2024), Serdarusic et al. (2024), Hassan et al. (2024), Sharma et al. (2024), Idrees et al. (2024), Chan et al. (2022), Tariq et al. (2024), and Rehman et al. (2024) used the survey strategy in their studies.

**Table 7** *Research Philosophies Used in Fintech Adoption*

| Research Philosophy | Article N | References                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Positivism          | 26        | Singh et al., (2020); Dwivedi et al., (2021); Xie et al., (2021); Roh et al., (2022); Liu et al., (2023); Kurniasari et al., (2023); Setiawan et al., (2021); Hasan et al., (2021); Siddik et al., (2023); Guang-Wen et al., (2023); Tian et al., (2023); Siddik et al., (2023); Hidayat-ur-Rehman et al., (2023); Aggarwal et al., (2023); Almashhadani et al., (2023); Igamo et al., (2024); Almaqtari et al., (2024); Serdarusic et al., (2024); Hassan et al., (2024); Sharma et al., (2024); Idrees et al., (2024); Chan et al., (2022); Tariq et al., (2024); Rehman et al., (2024). |

Table 7 illustrates that other researchers typically do not include this final part of our synthesis in systematic literature reviews. Our research details the theoretical frameworks that the writers have employed to bolster the literature on sustainability performance. Twenty-six of the 29 reviewed studies addressed the research topics of Fintech adoption using a positivist methodology. Five papers, however, are not clearly defined. As a result, the philosophical perspective that spatiality literature occupies within the corpus of knowledge is understood, and future scholars are guided to employ various philosophical lenses as well.

**Table 8** *List of Journals Used in Fintech Adoption*

| Journal                                                         | Articles<br>N | Reference                                                                                                                                                                 |
|-----------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Journal of Open Innovation: Technology, Market, and Complexity  | 7             | Idrees et al. (2024); Sharma et al. (2024); Almaqtari et al. (2024); Igamo et al. (2024); Hidayat-ur-Rehman et al. (2023); Nugraha et al. (2022); Setiawan et al. (2021). |
| Management Decision                                             | 1             | Singh et al. (2020).                                                                                                                                                      |
| International Journal of Global Business and Competitiveness    | 1             | Dwivedi et al. (2021).                                                                                                                                                    |
| Journal of Theoretical and Applied Electronic Commerce Research | 1             | Xie et al. (2021).                                                                                                                                                        |
| Asia-Pacific Journal of Business Administration                 | 1             | Rehman et al. (2024).                                                                                                                                                     |
| Global Business Review                                          | 1             | Hasan et al., (2021).                                                                                                                                                     |
| Journal of Banking and Finance                                  | 1             | Yan et al., (2022).                                                                                                                                                       |
| Systems                                                         | 1             | Siddik et al. (2022).                                                                                                                                                     |
| Electronic Commerce Research                                    | 1             | Roh et al. (2022).                                                                                                                                                        |
| Sustainability                                                  | 2             | Kurniasari et al. (2023); Liu et al. (2023).                                                                                                                              |
| Environmental Science and Pollution Research                    | 2             | Guang-Wen et al. (2023); Siddik et al. (2023).                                                                                                                            |
| Journal of Innovation and Knowledge                             | 1             | Siddik et al. (2023).                                                                                                                                                     |
| Journal of Cleaner Production                                   | 1             | Siddik et al. (2023).                                                                                                                                                     |
| Cogent Economics and Finance                                    | 1             | Aggarwal et al. (2023).                                                                                                                                                   |
| Cogent Social Sciences                                          | 1             | Almashhadani et al. (2023).                                                                                                                                               |
| Economies                                                       | 1             | Serdarusic et al. (2024).                                                                                                                                                 |
| Business Strategy and the Environment                           | 1             | Wang et al., (2024).                                                                                                                                                      |

|                                         |   |                        |
|-----------------------------------------|---|------------------------|
| Journal of Financial Services Marketing | 1 | Hassan et al., (2024). |
| International Journal of Bank Marketing | 1 | Chan et al., (2022).   |
| Heliyon                                 | 1 | Tariq et al., (2024).  |

| <b>Antecedents</b>                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                              |                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Individuals' Behavior related Antecedents</b>                                                                                                                                                                                                                                                                                                                                                                              | <b>Environment Related Antecedents</b>                                                                                                                                                                                                                                       | <b>Economic Related Antecedents</b>                                                                                                                            |
| Technological Attitudes (Responsiveness and Security)<br>Fintech Adoption,<br>Perceived Risk,<br>Social Influence, Performance Expectancy,<br>Effort Expectancy, Facilitating Conditions, Habit,<br>Attitude<br>Government Support, Financial Literacy<br>Perceived Ease Of Use,<br>Perceived Usefulness, Safety<br>Trust<br>User Innovativeness Social Influence<br>Green Innovation, Perceived Environmental Responsibility | Sustainable performance<br>Environmental sustainability<br>Social sustainability                                                                                                                                                                                             | Economic sustainability<br>performance                                                                                                                         |
| <b>Outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                              |                                                                                                                                                                |
| <b>Individuals' behavior-related Outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                 | <b>Environment Related Outcomes</b>                                                                                                                                                                                                                                          | <b>Economic Related Outcomes</b>                                                                                                                               |
| Intention to use Fintech<br>Intention to adopt Fintech<br>Adoption attitude<br>Actual behavior to adopt<br>Actual usage of technology<br>intention toward Fintech adoption<br>actual adoption intention<br>Fintech usage behavior<br>use behavior towards Fintech adoption<br>behavioral intention toward Fintech adoption<br>actual behavior usage                                                                           | Sustainable performance<br>Actual behavior toward sustainable performance<br>Intention towards performance<br>Adoption behavior toward sustainability<br>adopt agricultural Fintech products and services (BIAFPS)<br>corporate carbon emission<br>environmental performance | Economic Sustainable performance,<br>Actual behavior toward economic performance<br>Intention towards economic<br>Access to finance<br>Financial literacy rate |

**Figure 2.** *Conceptual Framework for Reviewed Studies of Fintech Adoption*

## 5. DISCUSSION

This discussion section provides a summary of the review's findings. Due to the topic's novelty, one of the main or critical challenges in this critical review faced by the researchers is the number of articles about the connection between Financial technology adoption and sustainability performance. This study thoroughly examined the research on the causation between technology, such as Fintech adoption, and sustainable performance between 2019 and 2024. Three primary clusters were found in this review: sustainability performance. The three dimensions

— social, economic, and environmental performance — are the main focus of the current study. Furthermore, the findings highlight international partnerships in particular nations that aid researchers in identifying possible joint ventures for their upcoming studies and the most pertinent research methodologies to use.

In the updated discussion, we shall now clearly expound how each of the major factors, including perceived ease of use, trust, technological readiness, financial literacy, and regulatory environment, affects Fintech adoption. For example, we cite the positive influence of perceived ease of use on user intent, as noted in articles such as Venkatesh et al. (2022) and Zhou et al. (2021), which highlight the decreased cognitive barriers to action. We also comment on the fact that trust is especially important in situations where users are sensitive to the privacy of data and financial fraud, which is confirmed by results obtained by Alalwan (2022). The individual factors are now placed in context with theoretical arguments as well as empirical evidence to give the discussion a deeper level of interpretation.

We have included a comparative sub-section, which talks about how the adoption of Fintech changes based on culture and national contexts. We can compare, as an example, the results of high-trust economies such as Sweden and South Korea, where the speed of adoption is higher because of well-developed digital infrastructures and institutional trust (Lee et al., 2023), and emerging markets such as Pakistan and Nigeria, where the pace of adoption is slowed down by low financial literacy and regulatory uncertainty (Ahmed et al., 2021; Chukwu et al., 2022). These comparisons show that there is a big difference in the role of socio-economic factors, cultural uncertainty avoidance, and technological infrastructure. We think that such cross-contextual discussion gives a subtle insight into the dynamics of Fintech adoption.

Many previous studies have explored the relationship between these two phenomena from different perspectives, such as green technologies in the banking industry (Dwivedi, Alabdooli, Dwivedi, 2021), the green finance effect in banking and small and medium enterprises, and the technology effect on sustainable banking (Nugraha, Setiawan, Nathan, & Fekete-Farkas, 2022). Most of the studies focus on the SDGs in the banking industry. Sustainable performance has three exclusive dimensions that are equally important and have been less explored in previous studies. This systematic literature review adopts the TCCM approach to conduct a detailed review. Quantitative methods, especially questionnaires, are most commonly used in previous research. However, due to these technologies, environmental sustainability is increased by increasing investment in green bonds, and sustainability is also increasing.

This study addresses loopholes/gaps in the existing literature on Fintech and sustainable performance (SP) by providing organized, comprehensive data. To enhance the understanding of all relevant interactions between innovations in Fintech

and consequences for benchmarks of sustainable performance, the discussion of the paper focuses on key competitive attributes, including the publishing activity and authors.

Using content analysis, the research explores predictors, outcomes, and boundary conditions within the Fintech-Sustainable performance connection. Synthesizing the body of known knowledge about the contributions of Fintech to sustainability goals, this analysis discusses the past, present, and future of this industry. The frequency tables, which are made by the author of this review, describe all possible variables, including predictors, mediators, moderators, and outcomes.

## **6. THEORETICAL IMPLICATIONS**

Theoretical implications are also supported by this study (Macchiavelli & Siri, 2022). As Fintech solutions often promote sustainable finance (e.g., green bonds), consumers' growing awareness of environmental issues may drive the adoption of Fintech solutions that align with sustainability goals. Technological Innovation: The theory emphasizes the role of technology in driving societal change, suggesting that innovations in Fintech, such as Blockchain for transparency or digital currencies for low-carbon footprint activities, can create a positive external environment for adoption. Fintech adoption, particularly in the context of sustainable finance (investing in eco-friendly projects, green Fintech), can contribute to achieving broader environmental and social goals, aligning with the SDGs (Sustainable Development Goals). As consumers embrace Fintech platforms that support ecological causes (e.g., sustainable investment options), this can lead to shifts in broader consumer behavior toward environmentally conscious financial decisions.

Our results have implications for Fintech adoption theory as they confirm and expand current adoption models (e.g., TAM, UTAUT) to the setting of modern Fintech ecosystems. In particular, we have found that the factors of trust and perceived risk become more prevalent adoption predictors than the classic ones, such as performance expectancy, especially in societies that are less digitally mature (e.g., Ahmed et al., 2021). Financial literacy is a moderating variable that multiplies or diminishes the impact of other drivers of adoption and has been insufficiently investigated in previous frameworks. The importance of regulatory support cannot be left in the background as an enabling factor, but should be brought to the forefront as a variable that impacts the perceived legitimacy and user trust in Fintech platforms. Such results narrow the gap in our theoretical comprehension of Fintech uptake by instating trust, financial literacy, and institutional relationships as the main, rather than marginal, variables.

We have now introduced a prospective theoretical lens by describing how all of the significant factors can define future adoption paths of Fintech. Trust: With the evolution of digital ecosystems, the domain of trust is expected to shift towards system-based trust, rather than interpersonal trust, which will demand that Fintech companies focus on algorithmic explainability and data control. Technological Readiness: As new technologies, such as blockchain, AI, and open banking APIs, emerge, the technological preparedness of users to embrace such technology will be of increased importance, and thus tech-skilling should take center stage in adoption theory. Financial Literacy: It is possible that in the future, Fintech models will include embedded financial education as an element of the user flow, and financial literacy becomes not only a prerequisite but a design variable. Regulatory Environment: With the growing adaptive regulatory sandboxes and decentralized financial systems, the theories on adoption in the future will have to consider dynamic regulatory models and participatory regulatory models. Cultural Norms: Cultural changes, particularly between collectivist and individualist cultures, can produce a redefinition of the parameters of social influence and risk aversion, which in turn might indicate the necessity to develop culturally-dependent adoption models.

## **7. PRACTICAL IMPLICATIONS**

Policymakers and future researchers can explore this study, which is a summarized form of the previous literature on the topic of how Fintech adoption leads to sustainable performance. Through this literature review, the novel technologies that increase the performance of sustainability are highlighted. This is also beneficial for financial institutions for the enhancement of technologies to reduce environmental problems and increase investment in eco-friendly projects. Shareholders and stakeholders must adopt the technologies, which include Blockchain, AI (artificial intelligence), and IoT (Internet of Things), to increase financial access towards sustainable performance and reduce transaction costs. New technologies like blockchains, which are transparent, reduce waste, and enhance the transparency of resources through the inclusion of green bonds and investment in green projects. The government and policymakers can enhance and pay attention to the digital infrastructure and financial literacy, as also supported by the study of Kaiser and Fahad (2024).

According to our empirical evidence and cross-study synthesis, the following factors are what financial institutions need to be strategic about: Consumer Trust, Technological Readiness, Financial Literacy, Perceived Ease of Use, and Regulatory Transparency. These are key motivators of Fintech uptake and also systematic as well as consumer-facing challenges that institutions ought to proactively tackle. Consumer Trust: Banks ought to invest in AI-based fraud detection, real-time risk analytics engines, and safe cloud environments to improve the trustworthiness of online transactions. Institutions can adopt AI-powered chatbots and anomaly

detectors, and blockchain-powered audit trails to make their digital interactions transparent, consistent, and secure, thus strengthening trust. Technological Readiness: Banks and Fintech companies have to continuously upgrade their legacy systems, improve interoperability across digital platforms, and utilize low-code/no-code interfaces to hasten the time to market their services. Partnerships with technology startups and use of agile developmental structures would help increase flexibility and responsiveness to changes in the market. Financial Literacy: The interactive financial education modules need to be included by institutions as part of mobile banking applications and digital wallets. Awareness of interest rates and security, as well as digital savings tools, can be increased through gamified learning, micro-courses, and real-time prompts (e.g., during transactions). Perceived Ease of Use: The needs of users should be put at the center of the design. These incorporate multilingual provisions, user-friendly interfaces, and voice-activated commands to render the digital platform inclusive and user-friendly, particularly among low-digital-literacy people. Regulatory Transparency: Institutions are encouraged to get involved in open banking regulations, have clear terms-of-service disclosures, and work with regulators to co-create conditions in sandboxes where safe experimentation can happen and innovations can be publicly trusted.

## **8. LIMITATIONS AND RECOMMENDATIONS**

In the framework of Fintech and sustainability performance, we primarily synthesize new ideas, contexts, traits, and approaches. We anticipate the review's conclusions will contribute to a broader understanding of the circumstances among scholars and practitioners. More precisely, mapping out the most widely accepted theories, settings, variables, methodologies, and documents and identifying possible future research topics that they should focus on may be helpful to academics in this discipline. Additionally, this will enhance their comprehension of how Fintech contributes to the development of sustainable performance. These recommendations are for both researchers and the government. First, in the future, researchers must introduce tokenized currency, that is, valuable, traceable tokens, including renewable energy investment. Second, create portfolios that should be personalized, and their profits utilized in eco-friendly projects. Third, sector-specific analysis of green bond effects on sustainability. Further, regional and cultural variations in how culture and economic structure affect the green market and technology in various regions. Lastly, regulatory frameworks or policy effects on sustainable performance or green markets.

The review includes several limitations in addition to the noteworthy theoretical and management consequences already discussed. Initially, the search query's titles, abstracts, and keywords contained general terms associated with sustainability and Fintech. The second limitation is that the study considers articles; future researchers can include books, dissertations, and case studies.

## 9. CONCLUSION

There are various amounts of research conducted on this contemporary trending topic; the research is conducted in different contexts, and different types of variables are studied. This study uses the SLR technique to investigate the variables found in the academic literature that affect the adoption or use of Fintech services. The results of this study show that several factors influencing Fintech adoption have been reported in the literature. The most commonly applied theories include TAM, UTAUT, and UTAUT2. Quantitative studies are more frequently used in 29 studies conducted by the SLR. Even other studies that are not part of this SLR used the quantitative methodology. This systematic review provides a summarized form of technology adoption, which was not previously available. Through this review, the researchers can easily understand the stage of the technology's effect on sustainable performance. This summarization makes this review different from previous empirically tested studies or detailed bibliometric analyses. According to the nature of the study, the positivist philosophy is used in most of the studies.

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