



Impact of Financial Technology (FinTech) Adoption Intentions on Banking Sector Sustainability: Moderating Role of Top Management Support in a UTAUT Framework

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ABSTRACT

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The financial services industry is rapidly evolving with the rise of FinTech, driving innovation and efficiency. FinTech adoption intentions reflect the willingness of individuals and businesses to embrace these technologies, shaped by various factors influencing their decision to engage with digital financial services. While research has highlighted the impact of FinTech on organizational sustainability through customer adoption, there is limited focus on organizational intentions, which are crucial for sustainability. This study examines how FinTech adoption affects the sustainability of the banking sector in developing countries like Pakistan, using the UTAUT framework and top management support as a key moderator. Based on 299 samples from bank customers and employees, PLS-SEM analysis reveals that while effort expectancy has a weak influence on FinTech adoption, performance expectancy (perceived benefits) significantly drives customer intentions. The findings confirm that FinTech adoption significantly enhances bank sustainability, with robust support from top management amplifying this effect. The study recommends that banks focus on improving the ease of use of FinTech solutions and clearly communicating their benefits to stakeholders to encourage adoption and promote sustainability.

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1.0 Introduction

FinTech, a fusion of “Finance” and “Technology,” is a contemporary concept revolutionizing the delivery and distribution of financial services to a wide range of customers and stakeholders, including businesses and entrepreneurs. It has played a crucial role in advancing financial inclusion and broadening access to financial services. Governments and central banks have actively implemented policies to support this expansion. The rapid growth of digitalization, along with increased internet and mobile technology penetration, has significantly improved global financial access, with 74% of adults worldwide holding an account by 2017. FinTech is currently innovating in various areas of the financial sector, including payments, investments, insurance, and loans. However, the Industrial Revolution has brought about environmental degradation, leading to resource depletion, pollution, and ongoing ecological deterioration. The notion of "Sustainable Development" was introduced in 1987 to address these challenges. According to the statement of Trebacz (2019), the Banking Sector has an important role in the economic development of any nation. The distance between the lender and the borrower becomes widened due to the flow of money from lending to taking and further depositing by the beneficiary to the concerned bank because banks play a different role as compared to other financial institutions as they have availability of deposits and lending products. FinTech has significantly influenced economic growth in numerous countries. In this modern time, investment banking as well as retail trading organizations are attached to the internet and smartphones for their daily life operations. Applications related to banking transactions have permitted potential customers in engaging digital financial transactions in their daily lives (Wang, 2021). The industrial revolution at 4th stage has raised the environment of transformational numeral technologies i.e. Internet of Things (IoT) and Artificial Technologies (IA) and this digital environment has changed the way of life of banking customers (Schulte & Liu, 2017), moreover, this digitalization has breached the economic segment tremendously. (Stern et al., 2017).

Gomber et al. (2018) stated that the reputation of financial services increased significantly following the worldwide financial disasters in 2008. Before this, outmoded monetary facilities were considered stable and secure employment sectors. Conferring to the statement of Saksonova & Kuzmina Merlino (2017), the rise of Fin-Tech organizations/businesses was spurred by the boundaries of old-style banking, which often left consumers in precarious situations, and by technological innovations that enhanced presentation, client involvement, and suitability (Gassot et al., 2016; Haddad & Hornuf, 2019; Haikel- Elsabeh et al., 2016; Soule, 2016). Outdated financial bases are futile to meet assorted financial desires, leading to the development of innovations such as microfinance, venture capital, crowd funding, peer-to- peer lending, and SME stock exchanges, which quickly spread globally (Drummer et al., 2017; Ibrahim, 2018). The continuous development and innovation in Financial Technologies are uncovering many potential resolutions to difficulties in the financial sector (Liu, 2018).

Pawłowska et al. (2022) argued that after the huge financial crisis in 2008, there's been a huge jump in how we use digital tech in finance. Fin-Tech companies are growing fast, & interesting to see how climate risks are affecting banks too and this growth is a great chance for

developed countries to pursue sustainable growth. Research on the diffusion of IT in the Indian banking sector has been relatively sparse to date, focusing primarily on technologies such as ATMs and banking through the Internet, therefore, Malhotra & Singh (2007) investigated different aspects of manipulating the adoption of Internet banking in India. Moreover, Agarwal et al., (2009) commented on and utilized the Unified Theory of Acceptance & Use of Technology (UTA&UT) prototypical to explore how customer perceptions, attitudes towards e-banking, and satisfaction levels are influenced. The UTAUT model postulates that intention and comporment evolve, emphasizing essential elements (performance expectancy, efforts expectancy, social influence, and facilitating conditions) and moderators (gender, age, experience, and voluntariness of use). Traditional banking is no longer sustainable for the future as the global finance industry faces immense risks from the climate crisis. Unchecked climate change, with temperature rises exceeding 3°C, could cost \$178 trillion by 2070—\$70 trillion more than the global GDP in 2022 without considering human costs. The case for sustainable banking is strong, as 49% of customers are willing to switch to banks offering more than financial returns. By providing genuine, impactful, and transparent sustainable solutions, banks can retain and attract clients while empowering customers to support climate action. Those who act on this demand will benefit most.

The key ideas of Sustainable Development Goals (SDGs) include different assignments i.e. reduce poverty, maintain peace, and protect the environment. However, many people are still unaware of the SDGs, highlighting the need for greater awareness (Zamora Polo et al., 2019). Moreover, achieving these goals requires the involvement of all participants, Governments, private industries, and non- governmental organizations (NGOs) (Velenturf & Purnell, 2021). The Sustainable Development Goals (SDGs) integrate three essential dimensions: economic, social, and environmental. Adopting FinTech supports all three dimensions of sustainability, acting as a catalyst for long-term economic growth (Ryu & KO, 2020). Studies indicate that leveraging technology can result in higher incomes and lower costs (Khan et al., 2022). Additionally, FinTech promotes environmental sustainability while advancing social, financial, and ecological objectives (Ziemba, 2019). However, despite the focus on technology's pivotal role in FinTech, there is a lack of research examining the specific ways information technology influences FinTech usage (Khan et al., 2022).

According to the investigation of Salleh, et al. (2002), all sectors managing technological change and innovation effectively is essential, and senior management must be a key player in this process. This is particularly relevant in the adoption of FinTech, where it is vital to ensure that all stakeholders, along with the systems and processes in place, align with the overall adoption strategy. For effective management of technological change and innovation, top management must carefully evaluate both the scope and timing of implementation. One strategy is to incorporate innovation and technology gradually over time, whilst another is to revamp the entire project, and if a company wants to choose, invest in, and execute ICT projects, it needs support from top management. You see when new technologies are introduced, having that "Top Management Support" makes a big difference for two main reasons. First, senior management controls the resources. Talking about technical resources financial help, & resources (Alsly & Ishak, 2018).

Noted by Lutfi et al., (2022), strong support from management helps use these resources effectively. This way, adopting new IT innovations goes smoothly. Secondly, top management plays a huge role in either boosting or blocking innovation. When they create a culture that encourages trying new things, it can reduce resistance within the organization. This means people are more likely to embrace innovations (Ahmad et al., 2014 Alsyof et al., 2022; Lutfi et al., 2022). This paper is structured into seven sections: introduction, literature review and concepts, theoretical foundation and research model, research design and methodology, data collection instruments, data analysis & interpretations, and research conclusion & policy implications.

1.1 Problem Statement

The rapid development of Financial Technology (FinTech) presents both opportunities and challenges for the banking sector. While FinTech has the potential to enhance operational efficiency, customer experience, and long-term sustainability, many traditional banking institutions face difficulties in adopting these technologies. The adoption of these technologies presents challenges for institutions. Widespread adoption is hampered by elements like financial instability, lack of technological know-how, and unwillingness to change. Furthermore, there is insufficient empirical support in the literature currently in publication on the direct relationship between FinTech adoption goals and the banking industry's sustainability. The role of senior management in promoting or hindering this process is not adequately covered by technology adoption models, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), even if they offer insights into organizational and individual behavior. In order to close this gap, this study evaluates how FinTech adoption aspirations affect the banking industry's sustainability, paying particular attention to how top management support influences this relationship. Making use of a UTAUT-driven analytical

1.2 Research Objectives

1. To examine the relationship between Fin-Tech adoption intentions and Bank sustainability.
2. To identify the key factors within the UTAUT framework that influence Fin- Tech adoption intentions in the banking sector.
3. To assess the moderating role of top management support in the relationship between Fin-Tec adoption intentions and bank sustainability: This objective focuses on understanding.
4. To provide practical recommendations for banks on leveraging Fin-Tech adoption for sustainable growth.

1.3 Research Questions

Examining Fin-Tech adoption and sustainability of the banking sector is inadequate, with most studies focusing on operational or financial impacts. The role of fintech in promoting sustainability is under- researched. Top management support's impact on fintech adoption and sustainability within banks is also underexplored. The UTAUT framework, used to study technology adoption behavior, is relatively new in examining bank sustainability in fintech adoption contexts. This study could highlight the gap in examining holistic sustainability outcomes driven by FinTech.

1. How do Fin-Tech adoption intentions impact bank sustainability inside the context

(UTA&UT)?

2. Is there any moderating role of “Top Management Support” in relation amongst Fin- Tech adoption intentions of banking customers and bank sustainability?
3. Which factors within the UTAUT framework (e.g., Performance Expectancy and effort expectancy) most strongly predict Fin-Tech adoption intentions in banks?
4. What are the implications of Fin-Tech adoption for the long-term sustainability of banks, considering financial, social, and environmental dimensions?

2.0 Literature Review

This section examines the empirical evidence on FinTech adoption intentions, focusing on the moderating influence of top management support and its combined impact on bank sustainability. Particular emphasis is placed on external factors such as performance expectancy and effort expectancy, which play a critical role in shaping these relationships.

2.1 Performance Expectancy (PE)

"When customers feel ease and comfort ability throughout using financial software and he or she doesn't face any hurdle regarding functioning these technologies, then he expects this comfort ability with the system," write Venkatesh et al., 2003. The banking industry has seen a boom in customer acquisition due to the convenience of digital banking. The adoption of Fin-Tech and digital banking was studied by Bankole et al., (2011), and they discovered a substantial association between the two. There is a substantial association between customers' expected effort and their adopted behavior, as discussed by Bhatiasevi (2016), who examined this phenomenon in the context of digital banking in Thailand. From the viewpoint of Venkatesh et al., (2012), "Performance Expectancy" denotes to degree which consumers may anticipate future use of technology to improve their experience with a certain set of financial transactions or other tasks. Concerned consumers' perceptions of the advantages they will reap from using digital banking serve as a proxy for Performance Expectancy (Tarhini et al., 2013). Customers' Performance Expectancy and their future actions in the digital banking realm are found to be positively related by Oliveira et al., (2014). The study suggests that mobile money service providers should enhance trust, eliminate security concerns, and design visually appealing services with advanced operational interfaces to improve user behavior (Tnsue, 2022).

According to the statement of Zhang (2017) Unified-Theory of Acceptance & Use of Technology (UTA&UT), several factors significantly influenced customers to adopt a new Fin-Tech platform. These factors included how useful people thought the platform would be (performance expectancies), how easy it was to use (effort expectancies), the encouragement of others (social influences), and the level of trust in the platform. Additionally, because the financial business is deeply controlled, Government policies and regulations were also a key factor for consumers when deciding whether to use Fin-Tech digital payment services. Technology readiness and acceptance are interconnected, as cultural values significantly influence people's perception and adoption of technology. Cultural norms and formalities can make it challenging to adapt to new technology, making it difficult to predict its acceptance and acceptance (Sunny, Patrick, & Rob, 2019).

When someone looks to use Financial Technology or Fin-Tech, they usually have some hopes about how those services will work. It's true! Performance Expectancy plays a big role in whether customers decide to adopt these services. People think that using Fin-Tech can help them tackle any financial task they might have (Venkatesh et al., 2003) How awesome is that? Also, Rabaa'I (2021) carried out an interesting study that explored the direct connection between Performance Expectancy and what people intend to do with Fin-Tech services. Performance Expectancy is only the degree to which an individual believes that utilizing a particular technology would improve their ability to do their activities (Venkatesh et al., 2003; Rahi et al., 2019). According to Yohanes et al. (2020), a significant contributing factor to consumers' motivation to practice information technology is Performance Expectancy. In a similar vein, Chan et al. (2022) discovered that this expectation affects users' decisions regarding Fin-Tech services. Accordingly, prior research indicates that Performance Expectancy is a crucial component of the UTAUT model, which aids researchers in understanding the factors that influence consumers' decisions to embrace Fin-Tech (Yan et al., 2021; Alkhwaldi et al., 2022). A thorough study conducted in Australia by Chan et al. (2022) discovered a significant and favorable correlation between Performance Expectancy and how likely people are in use of Financial Technologies and online banking services in their daily lives.

2.2 Effort Expectancy (EE)

An effort expectancy is the degree to which a customer feels ease in operating different Fin- Tech applications launched by his or her concerned banks, for instance, if a customer feels ease operating the Fin-Tech applications during its operations for different financial transactions puts a direct significant effect on adopt Fin-Tech services in future prospective, as past studies have identified that the customer effort expectations are significantly related to the intention to use Fin-Tech services provided by Financial institutions and it leads to the strongest contribution in continuation of Fin-Tech amenities(Farah et al., 2018; Lin, 2011; Shaikh et al., 2018; Wessels & Drennan, 2010).

Effort expectancy is all about how easy or hard people think it is to use certain technology (Bajunaied et al., 2023 Venkatesh et al., 2012). In simple words, it appears at how effortlessly the users feel they can learn and use the tech well. Many things affect effort expectancy. These include how user-friendly the interface is, how complex the tasks are to operate the technology, & how easy it feels to interact with it (Gansser & Reich 2021; Tamilmani et al., 2021). Researchers Senyo & Osabutey, (2020) discovered that “customers’ efforts expectancy” really matters when using new tech.

Customer perception of risk is a critical factor in consumer behavior, especially in FinTech adoption. Users are often more concerned with avoiding mistakes than maximizing benefits, as noted by Mitchell (1999). Risk perception involves both potential penalties and rewards due to the uncertainty in FinTech transactions. Pavlou and Stewart (2000) found that perceived security threats significantly influence customers' willingness to use digital banking. Additionally, fear can lower behavioral intentions and perceived control, affecting technology adoption (Belkhamza & Wafa, 2009). Studies show that users with positive expectations of financial actions are more likely

to adopt them, as highlighted by Lee & Lehto (2013). Some researchers, like Koufaris (2002), moreover, Patel & Patel (2018) commented that attitudes may not be necessary, as perceived usefulness and ease of use directly impact customer intentions. Financial technology (Fin-Tech) is often seen as a mobile-based system designed to improve the competence and efficacy of financial activities (Kim, 2015). The introduction of a modern digital financial platform transformed the business model by offering additional appealing features to customers (Walchek, 2020). Information technology has reshaped the business world by connecting all relationships and networks through technology (Lim, 2020). The growth of FinTech was fueled by the emergence of the sharing economy model and reinforced by government regulations in response to advancements in information technology (Blohm et al., 2013).

2.3 Top Management Support (TMS)

Now let's talk about top management. This means those big decisions that help an organization connect its internal structure to the outside world. They pick where to put resources & set examples for everyone else. Top management acts as a link between the organization and its environment. They are in charge of deciding the strategies for the whole organization. Because of this, they provide direction, guidance, and shape what's ahead for the organization (Elbanna, 2013). Top management is all about making big decisions. These decisions help to shape the internal setup of the organization and connect it to the environment. By committing resources wisely & setting important examples, top management have an important role. They adopt strategies for the organization, which means they guide its direction and plan for the future (Elbanna, 2013). Now, when people get used to new tech for business stuff, they're more likely to stick with it. The board of management in an organization is super important. They help align business processes with how Fin-Tech gets adopted. This also means providing training that's needed (Glavina, 2020) and keeping communication open (Panchal, 2019). Doing this boosts the organization's skills to use Fin-Tech well (Dwivedi, 2021).

Technology readiness and technology acceptance are linked together. How people view and adopt tech depends on how ready they are to use it and this means cultural values also play a big role in whether new technology gets accepted or not. Adopting tech can be tricky because different cultures have different norms. Sometimes, these customs make it hard to see if a new gadget or system will be welcomed (Sunny et al., 2019). Also, having support from top management is super important when it comes to picking the right technology for a company. So, what does that involve? Well, it's all about communication. Top leaders need to share how innovation fits into the bigger picture for the organization. They also need to create a skilled team of executives. Plus, a clear vision for the company's future can help. Remember, leaders have the power to influence how employees act within the organization. They can even motivate staff to jump on board with adopting e-government (Pudjianto et al., 2011).

2.4 FinTech Adoption Intentions (FAI)

Some research has shown that a major barrier to the widespread adoption of Fin-Tech services is the inability of non-technical users to comprehend the complexities of the software behind these innovations. Since people aren't likely to adopt something, they don't understand, a

lack of knowledge and instruction related is a major obstacle to the development of Fin-Tech in Pakistan (Ali et al., 2020). Pakistan's population lacks knowledge about FinTech's benefits due to regulatory barriers, low digital literacy, and lack of awareness. To expand access, Pakistan should study successful Fin-Tech sectors in emerging nations like India and Kenya, as well as the widespread use of Fin-Tech by the general populace (Mbiti & Weil, 2011; Saini & Bhati, 2019). Furthermore, M-Pesa is a mobile money podium extensively embraced in Kenya, and has greatly expanded the country's access to financial services by facilitating the transfer of funds via mobile phone (Mbiti & Weil, 2011).

Advancement in technologies leads to a decrease in charges/costs related to the services provided by the banks and it further enhances the profitability ratio of financial sector organizations and increases the effectiveness of the concerned banking organization (John, 2017). Financial Technology helps the banking sector to maintain its competitiveness in a competitive environment (Dwivedi, 2021). The advancement in technology improves customer loyalty to the organization and it helps to capture more customer's attachment to the organization and enhance organizational performance through new clients in the industry (Mainardes & Freitas, 2023). Internet banking and other modern ways and channels of payment are only possible through the adoption of Fin-Tech. According to the statement of Siddik, Rahman & Yong (2023), sustainable performance i.e. financial, environmental, and social performance of banking organizations all over the country is increasing day by day and competing for the international market as well due to the adoption of Financial Technologies. Researchers are focusing on Fin-Tech. Why? Well, more and more customers want products & services that are easy to use and good for the planet. Financial institutions, as noted by Nawayseh, (2020), have taken on many roles. They support the economy with tech like Fin-Tech. So, what is FinTech? It's using technology to offer different financial services and products to the general public, as mentioned by (Dwivedi et al., 2021). Over the years, advances in ICT have changed financial businesses a lot. Now, service delivery is better & more creative. Plus, we see improvements in helping the environment too (Yan et al., 2021).

2.5 Bank Sustainability (BS)

According to deep research by Zamora Polo et al. (2019), the transparency of sustainable banking empowers customers to make a positive difference in the world. As the demand for meaningful, sustainable choices grows, banks that proactively address this need will benefit the most from customer engagement in climate action. The key ideas of Sustainable Development Goals (SDGs) include different assignments i.e. reduce poverty, maintain peace, and protect the environment. However, many people are still unaware of the SDGs, highlighting the need for greater awareness. Achieving these goals requires the involvement of all participants, Governments, private industries, and non-governmental organizations (NGOs) (Velenturf & Purnell, 2021). The Sustainable Development Goals (SDGs) cover three key dimensions which are economic, social, and environmental. Adopting FinTech can support all three dimensions, as it is seen as a catalyst for long-term economic growth (Ryu & KO, 2020). Research shows that the use of technology can lead to higher incomes and reduced costs (Khan et al., 2022). Furthermore, Fin-Tech contributes to environmental sustainability and supports social, financial, and ecological

goals (Ziemba, 2019). Despite the recognized importance of technology in FinTech, there is a lack of research exploring the specific impact of information technology on FinTech usage (Khan et al., 2022).

2.6 Hypothesis Development:

2.6.1 Relationship between Performance Expectancy and intentions to adopt FinTech

Performance expectancy refers to an individual's confidence that using a specific technology will improve their task performance (Venkatesh et al., 2003; Rahi et al., 2019). Yohanes et al. (2020) identified performance expectancy as a key factor influencing users' intentions to adopt information technology. Supporting this, Chan et al. (2022) found that performance expectancy has a significant impact on users' intentions to use FinTech services. Research highlights performance expectancy as a crucial element of the Unified Theory of Acceptance and Use of Technology (UTAUT), providing insights into users' adoption of financial technologies (Yan et al., 2021; Alkhwaldi et al., 2022). For instance, Chan et al. (2022) conducted a study in Australia and confirmed a strong positive relationship between performance expectancy and users' behavioral intentions to adopt FinTech and online banking services. Similarly, Rabaa'i (2021) demonstrated a direct positive link between performance expectancy and FinTech adoption intentions and he also noted that FinTech remains a relatively new concept in many developing countries. Based on these insights, it is assumed that:

H1: Performance Expectancy (PE) has a significant impact on banking customers' intentions to adopt Financial Technology (FinTech).

2.6.2 Relationship between Effort Expectancy (EE) and intentions to adopt FinTech

Effort expectancy refers to the perceived ease or difficulty of using a specific technology or system (Bajunaied et al., 2023; Venkatesh et al., 2012). In simpler terms, it reflects how easy users believe it is to learn and use the technology effectively. Effort expectancy is influenced by various factors, such as the design of the user interface, user-friendliness, task complexity, and the perceived ease of interaction (Gansser and Reich, 2021; Tamilmani et al., 2021). Senyo and Osabutey (2020) also highlighted that effort expectancy involves how easily users can operate and learn to use a technology. Based on this, I assume that:

H2: Effort Expectancy (EE) has a significant impact on banking customers' intentions to adopt financial technology (FinTech).

2.6.3 Relationship between FinTech adoption intentions on sustainability

Researchers are increasingly focusing on FinTech due to the growing consumer preference. According to Nawayseh (2020), financial institutions have played a crucial role in supporting financial and economic activities through advancements in technology, including FinTech. FinTech refers to the application of technological innovations to deliver financial products and services to customers (Dwivedi et al., 2021). The advancement of ICT has altered financial businesses throughout the years, allowing for more efficient and inventive service delivery as well as enhanced environmental sustainability (Yan et al., 2021). Hence, I assumed that;

H3: FinTech adoption intentions significantly effect on Bank's sustainability

2.6.4 Relationship between Management Support (MS) and intentions to adopt FinTech

Top management is tasked with making strategic decisions that align the organization's internal structure and processes with its external environment by allocating resources and setting precedents. Acting as the link between the organization and its surroundings, top management plays a critical role in shaping the organization's strategies and steering its overall direction. Therefore, direction, guidance, and future strategies of the organization (Elbanna, 2013). Moreover, Gupta and Islamia (2008) argued that banks seeking to adopt technology must leverage their core competencies, with top management leading the change through a clear vision of creating value for diverse customer segments. They also highlighted the importance of bankers' attitudes toward Internet banking and the need for well-planned strategies before its implementation. Hence, I observe that;

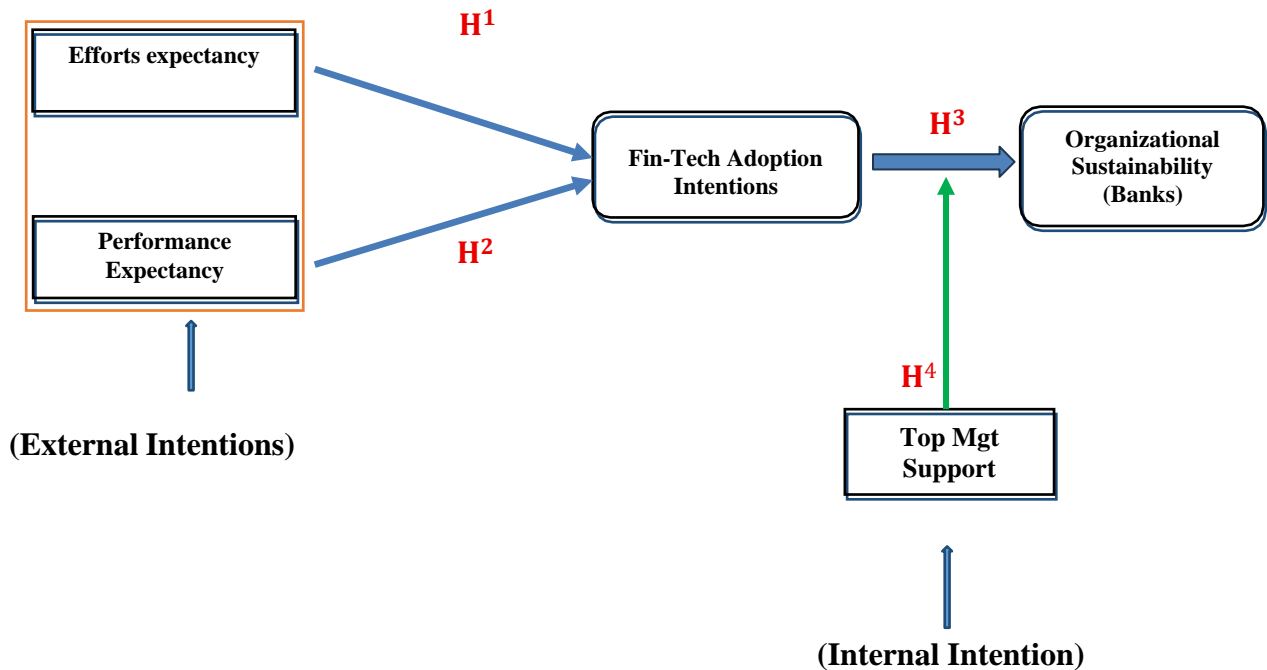
H4: Top Management Support (MS) significantly affects intentions to adopt Financial Technology (FinTech)

2.7 Theoretical Foundation and Research Model

This research is based on the Unified Theory of Acceptance and Use of Technology (UTAUT), which explains user intentions and behaviors in adopting new technologies. UTAUT's core constructs include Performance Expectancy and Effort Expectancy, which are key external factors influencing banks' FinTech Adoption Intentions. Performance Expectancy refers to the belief that FinTech adoption enhances organizational performance, including operational efficiency and sustainability. Effort Expectancy relates to how easy it is to learn and use FinTech, influencing individuals' willingness to adopt it. While these external factors drive adoption, Top Management Support, an internal factor, is hypothesized to moderate the relationship between FinTech adoption intentions and bank sustainability. Strong leadership can accelerate adoption by providing necessary resources, fostering innovation, and aligning FinTech initiatives with sustainability objectives.

This study extends the Unified Theory of Acceptance and Use of Technology (UTAUT) by introducing bank sustainability as the dependent variable, with top management support as a moderating factor. This approach offers valuable insights into the role of leadership in leveraging FinTech for sustainable outcomes. The proposed research model centers on Bank Sustainability, defined as a bank's capacity to maintain long-term viability while integrating environmental and social considerations. FinTech adoption is anticipated to enhance sustainability by improving efficiency, reducing resource consumption, and facilitating green finance. The independent variable, FinTech Adoption Intentions, is shaped by two primary drivers: Performance Expectancy, the belief that FinTech will improve organizational performance and sustainability, and Effort Expectancy, the perceived ease of adopting and using FinTech. Top Management Support, the moderating variable, represents the extent of leadership involvement in encouraging and facilitating FinTech adoption. It is expected to strengthen the link between adoption intentions and sustainability, ensuring that adoption efforts are aligned with broader sustainability goals. This research model, guided by UTAUT, offers a structured approach to understanding how external and internal factors influence the adoption of FinTech in the banking sector, and ultimately, how these factors contribute to the sustainability of banks.

Figure 1. Proposed Research Model



3.0 Methodology

3.1 Research Design

Current research employs a quantitative methodology to examine the sustainability of the banking sector in Pakistan. Such research is stranded in the Unified Theory of Acceptance & Use of Technology (UTA&UT) framework. By following the techniques of Krejcie & Morgan, (1970), Two Hundred and Twenty (350) questionnaires were distributed among Fin-Tech users having different demographic backgrounds including Banking sector employee including top-level management and the desired response received from 299 Fin-Tech users comes to percentage of 85.42% which is higher than the expectable survey response of 50%.

3.2 Population and Sample

The study is focused on those Banks providing facilities of Financial Technology applications to the customers for their day-to-day operations i.e. payments of utilities, application for loans, managing money boxes, receiving payments, etc. situated in the Islamabad Capital Territory (ICT). Data was collected from Banking customers using different applications of Financial Technologies of their concerned banks i.e. Mobile Banking Apps (HBL Mobile, UBL Digital, Meezan Mobile Banking), Internet Banking (for funds transfer and payment of utility bills), Digital Wallets (Enabled users to store money digitally, make payments, transfer funds, and pay utility bills through their mobile phones.), P2P Lending Platforms (Finja and Tez Financial Services), Digital Loan Applications, and many more.

3.3 Data Collection Methods

For data gathering, primary data is composed through questionnaires and in-person meetings with the identified participants i.e. banking customers using Fin-Tech Applications of the concerned Banks and Banks employees including top-level management of the concerned

Banks. A preliminary 350 questionnaires were distributed among different Fin-Tech users i.e. bank customers and bank employees including bank management and only responses from 299 Fin-Tech users were received.

3.4 Research Instruments

A comprehensive questionnaire is utilized and designed to capture relevant data, alongside interview protocols for gathering insights from top management of bank stakeholders i.e. employees including management of FinTech Banks and their customers.

3.5 Data Analysis Techniques

The research model utilizes Structural Equation Modeling (SEM) to assess latent variables and examine the causal relationships between all latent variables.

3.6 Data Collection Instruments

Constructs	Number of Items	Source
Performance Expectancy (PE)	10	Yohanes et al. (2020) and (Creswell & Creswell, 2017)
Effort Expectancy (EE)	10	Bajunaied et al. 2023
Top Management Support (TMS)	10	Elbanna, 2013 and Teo, Lim, & Lai, 1999
FinTech Adoption Intentions (FAI)	10	Nawayseh, 2020 and Elkington, 1997

To collect data on FinTech adoption intentions, bank sustainability, and the moderating role of top management support, a structured survey questionnaire is used. This method, common in quantitative research, allows for the measurement of key constructs like FinTech adoption intentions, performance expectancy, effort expectancy, top management support, and bank sustainability (Creswell & Creswell, 2017). The questionnaire is divided into sections, each using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree):

- Section 1: Gathers respondent background (e.g., job role, experience, and department).
- Section 2: Assesses FinTech adoption based on Performance and Effort Expectancy (Venkateshet al., 2003).
- Section 3: Evaluate the impact of FinTech on bank sustainability (Elkington, 1997).
- Section 4: Measures the moderating effect of top management support on the adoption-sustainability relationship (Teo, Lim, & Lai, 1999).

4.0 Findings and Results

4.1 Reliability and Validity of the Constructs:

To evaluate the study's measurement model, the researcher examined item reliability, assessed each potential construct, and tested internal consistency reliability, including discriminant validity, construct reliability, and convergent validity. (Hair et al., (2011) proposed an external load of between 0.40 and 0.70 as reliable and acceptable. They argue that an item should only be removed if doing so enhances the reliability of the constructs.

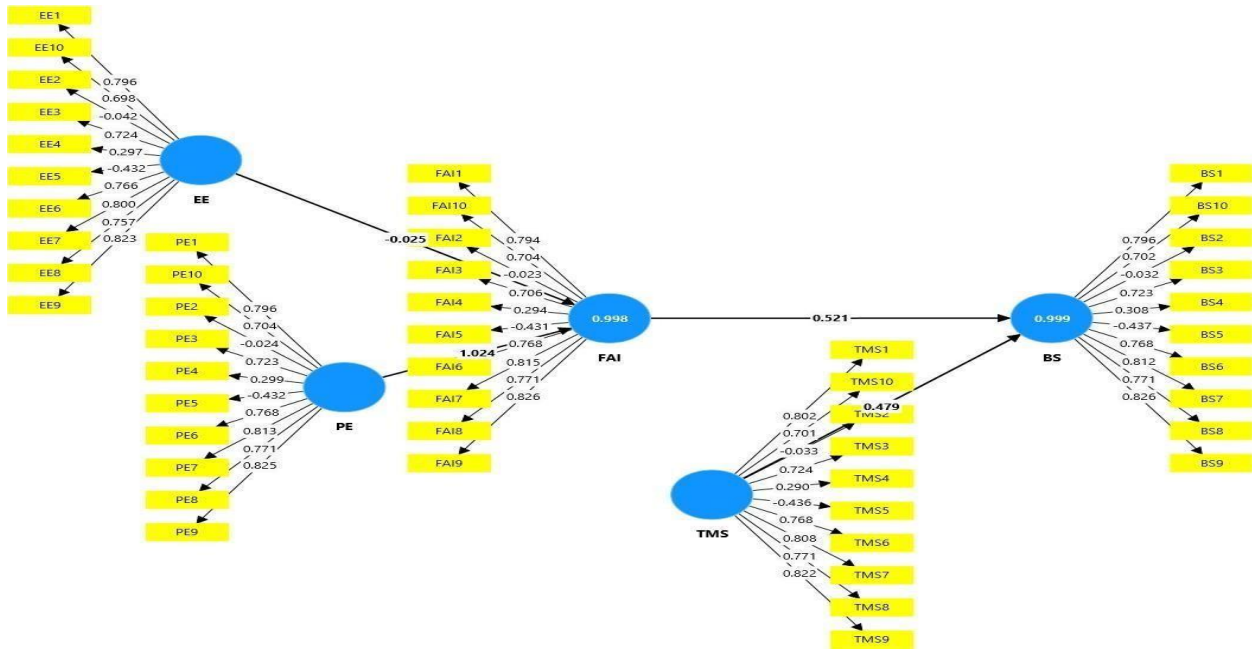
Figure 2 shows that the endogenous variable and each construct i.e. Banks Sustainability (BS), Effort Expectancy (EE), FinTech Adoption Intention (FAI), Performance Expectancy (PE), and in last Top Management Support (TMS) all have equal items (10 items for each construct) with their concerned Factor Loadings, Cronbach's Alpha values and Composite Reliability.

Table 01. Reliability and Validity of the Constructs

Constructs	Items	Factor Loadings	Cronbach's alpha	Composite reliability (rho_c)
Banks Sustainability	“BS-1”	0.796	0.787	0.832
	“BS-2”	-0.032		
	“BS-3”	0.723		
	“BS-4”	0.308		
	“BS-5”	-0.437		
	“BS-6”	0.768		
	“BS-7”	0.812		
	“BS-8”	0.771		
	“BS-9”	0.826		
	“BS-10”	0.702		
Efforts expectancy	“EE1”	0.796	0.783	0.828
	“EE2”	-0.042		
	“EE3”	0.724		
	“EE4”	0.297		
	“EE5”	-0.432		
	“EE6”	0.766		
	“EE7”	0.8		
	“EE8”	0.757		
	“EE9”	0.823		
	“EE10”	0.698		
Fin-Tech Adoption Intentions	“FAI1”	0.794	0.785	0.83
	“FAI2”	-0.023		
	“FAI3”	0.706		
	“FAI4”	0.294		
	“FAI5”	-0.431		
	“FAI6”	0.768		
	“FAI7”	0.815		
	“FAI8”	0.771		
	“FAI9”	0.826		
	“FAI10”	0.704		
Performance Expectancy	“PE1”	0.796	0.787	0.832
	“PE2”	-0.024		
	“PE3”	0.723		
	“PE4”	0.299		
	“PE5”	-0.432		
	“PE6”	0.768		
	“PE7”	0.813		

	“PE8”	0.771		
	“PE9”	0.825		
	“PE10”	0.704		
Top Management Supports	“TMS1”	0.802	0.786	0.831
	“TMS2”	-0.033		
	“TMS3”	0.724		
	“TMS4”	0.29		
	“TMS5”	-0.436		
	“TMS6”	0.768		
	“TMS7”	0.808		
	“TMS8”	0.771		
	“TMS9”	0.822		
		“TMS10”	0.701	

Figure 2. Path Co-efficient



4.1.1 Interpretation of Table-01

Reliability and validity are crucial in research, especially when measuring constructs or latent variables. Reliability ensures the stability of a measurement instrument over time, ensuring repeatable results. Factor loading, Cronbach's Alpha, and Composite Reliability are key measures of internal consistency. Factor loading is a strong positive correlation between an observed variable (BS-2) and the underlying latent construct (bank sustainability). Cronbach's Alpha measures the internal consistency of items in a construct, with values greater than 0.70 indicating good reliability. The Composite Reliability is a more accurate representation of internal consistency, with values above 0.832 indicating good reliability. Most constructs, such as Bank Sustainability, Effort expectancy, Fin-Tech adoption intention, Performance Expectancy, and Top Management Support, have factor loadings above 0.70, indicating a high correlation with

related items. However, some items have negative factor loadings, indicating negative correlations with the underlying construct. Cronbach’s alpha values for all constructs are close to or above the 0.70 threshold, indicating acceptable internal consistency. The composite reliability values (rho_c) for all constructs are also above 0.80, suggesting strong internal reliability. Several items across all constructs (e.g., BS-2, EE2, FA12, PE2, and TMS2) have low or negative factor loadings. These items may need to be removed or revised for the scales to better represent their respective constructs. Despite some weak items, the majority of items in each construct have strong factor loadings (above 0.70), supporting the overall validity of the constructs.

4.2 Path Coefficients

Table 02. Path Coefficients

Constructs	Path Coefficients
EE -> FAI	-0.025
FAI -> BS	0.521
PE -> FAI	1.024
TMS -> BS	0.479

4.2.1 Interpretation of Table-02

Path coefficients are standardized regression coefficients that quantify the direct effect of one variable on another in a path model. They provide an understanding of the strength and direction of these associations, helping researchers understand the dynamics of the model and validate theoretical constructs with empirical data. For example, a Path-Coefficient of 0.75 designates a strong, constructive association between variable (A) and variable (B), here, a Path-Coefficient of -0.025 proposes a weak, adverse connection among “Efforts Expectancy” and “Fin-Tech Adoption Intention”. A Path-Coefficient of 0.521 indicates “moderate” to sturdy confident affiliation between Fin-Tech Adoption Intention and Band Sustainability, while a Path-Coefficient of 1.024 suggests a strong constructive association amongst Performance Expectancy of customers their adoption the Fin-Tech. A path coefficient of 0.479 suggests a moderate to solid significant affiliation between managementsupport & Bank Sustainability.

4.3 Results Hypothesis Testing

Hypothesis		Total Effect	Remarks	Supported/Not Supported
EE -> FAI H1	Effort expectancy has a significant effect on Fin-Tech Adoption Intentions.	-0.025	No Accepted	Not Supported
PE -> FAI H2	Performance Expectancy has Significant Effect On Fin-Tech Adoption Intentions.	1.024	Strongly Accepted	Supported
FAI -> BS H3	Fin-Tech Adoption Intentions have a significant Effect on Bank's Sustainability.	0.521	Highly Accepted	Supported
TMS -> BS H4	Top Management Support has a significant effect on Bank's Sustainability	0.479	Satisfactory Accepted	Supported

4.3.1 Interpretation of Table-03

The alternate hypothesis (H1) suggests that Effort expectancy significantly influences Fin-Tech adoption intentions, while (H2) suggests a significant association between Performance Expectancy and Fin-Tech adoption intentions. (H3) suggests that Fin-Tech adoption intentions significantly influence banks' sustainability, with a positive effect of 0.521. (H4) suggests that Top Management Support has a substantial and positive effect on banks' sustainability, with an optimistic effect of 0.479. These hypotheses are tested against the null hypothesis.

4.4 Model Assessment

Table 04. Model Assessment

Constructs	Path co-efficient	f-square	Org sample	Sample's mean (M)	SD	T-stat	P-values
EE -> FAI	-0.025	0.001	0.190	0.218	0.168	1.128	0.259
FAI -> BS	0.521	0.545	0.424	0.425	0.143	2.971	0.003
PE -> FAI	1.024	1.385	0.806	0.778	0.168	4.795	0.000
TMS -> BS	0.479	0.460	0.574	0.574	0.143	4.023	0.000

4.4.1 Interpretation of Table-04

Table 04 presents an assessment of the structural model, revealing a weak undesirable connection between Efforts-Expectancy (EE) and Fin-Tech Adoption Intention (FAI). The Path Coefficient of - 0.025 indicates a negligible impact, while the T-statistic and P-values suggest that there is no significant relationship. The second construct, FAI -> BS, shows a moderate positive relationship, with a large effect size. The third construct, PE -> FAI, has a strong positive relationship, with a large effect size. The fourth construct, TMS -> FAI, has a moderately strong positive effect on BS, with a large impact, indicating TMS is an important factor in explaining variations in BS. The relationship is statistically significant, reinforcing the reliability of the

positive relationship observed between TMS and BS.

4.5 Regression Analysis

Table 05. Regression Analysis

	n-standardizedco-efficient	ndardized co-efficient	standard error	T-value	P-Value	2.5 %	97.5 %
FAI1	0.493	0.527	0.029	16.852	0.000	0.43	0.550
TMS1	0.442	0.470	0.029	15.028	0.000	0.38	0.500
Intercept	0.241	0.000	0.059	4.096	0.000	0.12	0.356

4.5.1 Interpretation of Table-05

The unstandardized coefficient represents the change in the dependent variable (FAI1) for each one-unit change in the independent variable. A coefficient of 0.493 specifies a moderate to strong optimistic relationship between the independent variable and FAI-1, allowing for comparison across different variables or scales. A standardized coefficient of 0.527 suggests a moderate to strong positive relationship, allowing for comparison across different variables or scales. A Standard Error of 0.029 is relatively small, indicating a precise and low level of variability. A T-value of 16.852 is statistically significant, suggesting a strong impact of the independent variable on FAI-1. A P-Value of 0.000 shows an extremely statistically momentous relationship, suggesting a solid indication against the null hypothesis. The confidence interval ranges from 0.435 to 0.550, reinforcing the consequence of the coefficient and intercept in the regression model is statistically significant and positive, with an estimate of 0.241, which is reliably different from zero.

5.0 Discussion and Conclusion

This research delivers an inclusive examination regarding the influence of Fin-Tech adoption intentions on bank sustainability, employing the Unified Theory of Acceptance & Use of Technology (UTA&UT) outline. By implementation of “Structural-Equation Modeling (SEM)” techniques via Smartpls software, the research explored the roles of effort expectancy, performance expectancy, and top management support in shaping Fin-Tech adoption intentions and their subsequent effects on the sustainability of banks. The findings reveal that effort expectancy, which refers to the ease of use of Fin-Tech applications, has a feeble/weak impact on Fin-Tech espousal intentions. In contrast, “Performance- Expectancy”, which highlights the supposed/perceived benefits and effectiveness gains from using Fin- Tech, shows a significant positive impact on customers' intentions in adapting Fin-Tech applications of Banks. This highlights the critical importance of showcasing clear and tangible benefits to encourage the acceptance of FinTech solutions. The study also confirms a strong link between FinTech adoption intentions and bank sustainability, indicating that banks that embrace FinTech are better equipped for long-term success and resilience. Furthermore, top management support plays a crucial role in strengthening the positive impact of FinTech adoption on sustainability. This underscores the vital role of leadership in fostering an environment that encourages innovation and drives digital transformation.

5.1 Policy Implications

The observations lead to many future research directions here to understand the Intention

to adopt Fin-Tech and bank sustainability relationship. These include looking for more moderating variables, broadening the regional context, doing Longitudinal studies and customer perspectives, exploration of external government support, government policies underpinning policy interventions evaluation, and economic factors cross-industry comparisons. These results may give a certain degree of lofty elevation into the verticals of Fin-Tech economy and sustainability of banks. The study also indicates extension on other regions or even nations, carrying out multiyear, customer-centered, outside-in economic. After controlling for such exclusionary factors, and by evaluating how government support and policy interventions play a part. Future research must suggest moderating variables such as the organizational culture and the technological willingness/readiness to understand the relationship between Fin-Tech adoption and bank sustainability.

Hassan Raza: Problem Identification and Theoretical Framework

Nazakat Ali: Data Analysis, Supervision and Drafting

Conflict of Interests/Disclosures

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