# “A moderated mediation analysis on fintech adoption, social influence, competitiveness and financial performance of commercial banks in Pakistan”


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| **AUTHORS** | Aamir Hussain<br>Md Shahin Mia<br>Ferdoushi Ahmed<br>Paratta Prommee |



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**Aamir Hussain** (Malaysia), **Md Shahin Mia** (Malaysia), **Ferdoushi Ahmed** (Thailand), **Paratta Prommee** (Thailand)

# A MODERATED MEDIATION ANALYSIS ON FINTECH ADOPTION, SOCIAL INFLUENCE, COMPETITIVENESS AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN PAKISTAN

## Abstract

Commercial banks in Pakistan have a great potential to improve competitiveness and financial performance through fintech adoption. Therefore, this study aims to assess the impact of fintech adoption on financial performance of commercial banks while emphasizing the moderating role of social influence and mediating role of competitiveness in the banks in Pakistan. A cross-sectional survey was conducted with five largest and most reputed commercial banks in Pakistan. Bank employees, particularly bank managers, were chosen as the respondents. The sample size for the study was 367 bank managers selected randomly from the chosen commercial banks. A standardized and structured questionnaire was used to interview the selected respondents to collect primary data. The partial least square structural equation modelling was employed to analyze the data and process the findings of the study. The analysis revealed that 62% of the respondents were male, and nearly 47% were in the age of 40 years and above. The study found a positive and significant impact of fintech adoption on the financial performance of banks. It was also found that social influence had a significant impact on banks' competitiveness. Moreover, the findings revealed that competitiveness had a significant mediation impact on the increase in fintech adoption and consequently on the financial performance of banks.

**Keywords** fintech effect, financial performance, moderating-mediating role, commercial banks

**JEL Classification** G21, O33

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Aamir Hussain, Ph.D. Scholar, School of Economics, Finance and Banking (SEFB), University Utara Malaysia, Malaysia.

Md Shahin Mia, Ph.D., International Senior Lecturer, School of Economics, Finance and Banking (SEFB), University Utara Malaysia, Malaysia. (Corresponding author)

Ferdoushi Ahmed, Ph.D., Assistant Professor, Faculty of Economics, Prince of Songkla University, Thailand; Research Center for Fundamental Economic Development and Agricultural Economic Potential in the South Region, Thailand.

Paratta Prommee, Ph.D., Assistant Professor, Faculty of Economics, Prince of Songkla University, Thailand; Research Center for Fundamental Economic Development and Agricultural Economic Potential in the South Region, Thailand.

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## INTRODUCTION

Financial technology (fintech) is one of the most important and significant innovations in the financial sector, which combines finance with information and communication technology (ICT) to create new business models, apps, methods, and products that affect financial markets and organizations and provide financial facilities and services (Lee & Shin, 2018; Singh et al., 2020a). Fintech has been recognized as a source of growth for the next generation. It was reported that the world invested 105.3 billion dollars in fintech in 2020, making it the second-highest benchmark in the history of financial industry (KPMG Taseer Hadi & Co., 2020). The global fintech industry is expanding along with the proliferation of new fintech companies around the world (Mombeuil, 2020). Fintech provides customized, easier, and flexible financial products and services to the customers (Singh et al., 2021; Ryu, 2018). It is also believed to offer easy, clear, and quick access for customers to financial information with less expenses (Singh et al., 2020b; Ryu, 2018). In addition, fintech brings high productivity as well as profits for banks and other providers of financial products and services (Singh et al., 2020b).



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Moreover, fintech is believed to enhance competitiveness for financial institutions, especially commercial banks (World Economic Forum, 2015). The banks play a vital role for the financial growth and sustainability of the individual, industry, and the economy of a country. It could be good for the whole economy if commercial banks would be more competitive as it would force them to provide the financial services to the customers at a lower cost. Besides this, competitiveness induces the banks to mobilize savings from individual and institutional savers as well as invest these savings to borrowers in an efficient and cos-effective manner. People can borrow money from a variety of alternative sources in a modern economy, but banks play an important role in financing the commercial organizations (Egbendewe & Oloufade, 2020). Therefore, it is essential for commercial banks to deliver banking facilities to their customers by redefining its processes and services to attain competitiveness and maintain high level of performance (Hu et al., 2019). In this regard, fintech can assist banks in streamlining their operations and services, thereby contributing to the enhancement of their business processes. Usage of fintech in banking activities has the potential to boost both the competitiveness and financial performance of banks (Arulraj & Annamalai, 2020; Bömer, 2020; Chen, 2020; Glavina et al., 2020; Kemunto & Kagiri, 2018; Sudiatmika & Purwanti, 2020; Wang et al., 2021).

In addition, social influence is a crucial factor in determining whether individual people in a community would accept and use technology-based financial services. Social influence refers to the impact of other people whose opinions and views are respected and valued in the community. In other words, social influence implies the people who are considered vital in the community such as family members, friends, relatives, or peers who can try and convince someone to accept and using a new product and services (Bozan et al., 2016). Social influence is based on social networks that connect people among groups, professions, organizations, clubs and so on. Previous studies reported that the adoption and utilization of digital financial services were accelerated when members of social networks communicated with one another (Naeem, 2019; Xie et al., 2021).

Pakistan is a developing country with approximately 221 million population in the year 2020 (The World Bank, 2020). Like other developing countries, commercial banks play a very important role in the economic development of Pakistan. However, the traditional banking system is still followed by a big portion of the population in the country (Rizvi et al., 2018). In addition, people are hesitant to use technology-based financial services as they are afraid of the consequences of the emerging risks like cyber security that come with using new technology (Treleaven, 2015; Shahid, 2016). Consequently, the financial performance of commercial banks in the country is comparatively low. In this circumstance, fintech can play a very important role in enhancing financial performance of Pakistan's commercial. The country has a large percentage of its population that uses social media, a high number of young people who use smart phones, a higher level of internet usage in most towns and cities, and a financial system that is ready to adopt new ideas. Moreover, it has a pretty good regulatory system for financial services, including rules and regulations about the Payment System Operators (PSOs), and Payment Service Providers (PSPs), as well as online banking services (Rizvi et al., 2018). In short, Pakistan has a great potential for fintech innovation and adoption, particularly for the banking industry. However, there is no empirical evidence that clearly demonstrates a connection between fintech adoption and the financial performance of commercial banks in Pakistan. The moderating impact of social influence and mediating impact of competitiveness on financial performance of Pakistani banks have also not been examined yet.

# 1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

**Fintech** means new technology used in financial services industry around the world (RBI, 2001). Fintech services can be classified into six major types, namely:

i) payment and clearing settlements;

ii) deposits, lending, and raising the capital;

iii) market provisioning;

iv) investment management;

v) data analytics; and

vi) risk management (World Economic Forum, 2015).

These kinds of new ideas have a big effect on the financial services industry. So, it is clear that fintech is no longer restricted to the financial industry alone, it has extended to retail groups and telecom companies as well (RBI, 2017). By utilizing their existing networks, these new players provide financial services in new and creative ways. Fintech has made it easier to use financial services by improving and innovating basic financial services and creating new apps for things like making payments, savings, borrowing, managing risk, as well as getting financial advice (He et al., 2017). So, the providers of financial services need to change their strategies if they want to stay relevant and make profit. In recent years, there has been a significant increase in the number of technology advancements and innovations in the financial services industry, both of which have caused a shift in the way that consumers utilize these services (Singh et al., 2021). Fintech is getting growing popularity because it has a lot of advantages over traditional financial services. It provides real-time processing, as well as 24-hour, seven-day services even at a low cost than the traditional financial services. It is considered as a blessing for the people, especially who live in rural areas where there are no bank branches (Moufakkir & Mohammed, 2020). Despite the fears about the security risks that come with the technology, people are encouraged to use it in their daily financial transactions because of its ease and economic benefits (Haqqi & Suzianti, 2020).

**Financial performance** is defined as the capability of the business to attain a set of financial objectives such as profitability, liquidity and so on (Al-Matari et al., 2014). It can be considered as a way to measure how well a company has met or exceeded its financial goals. In other words, a company's financial performance can be defined as a measurement of how successfully it is achieving its financial goals. According to the definition provided by Baba and Nasieku (2016), the financial performance of a company demonstrates how it makes use of its assets to generate income, which helps stakeholders in determining what they need to do. Financial performance is directly related to the growth, competitiveness, and survival of a firm (Nyamita, 2014; Hussain, Ahmad, & Mia, 2023). Nzuve (2016) reported that position of the commercial banks is mainly based on financial performance of the banks, which is used to show the strength as well as weaknesses of each bank. Rega (2017) studied how fintech affects the financial performance of European banks. The study observed a very significant and positive link between technological innovation (fintech) and bank profits. In accordance with the prior study, Ndunga et al. (2016) examined the effect on the performance of banks through technological innovation in Meru city, Kenya. The study revealed that innovation positively influences the financial performance of the commercial banks in the Meru towns. The study also reported that fintech adoption of commercial banks has a significant potential for financial performance growth. Tahir et al. (2018) studied the effect of the financial innovation on the performance of commercial banks in Pakistan, and this study observed a high significant and positive association between Web/Internet-based transactions as well as efficiency of the banks.

**Social influence** refers to how a person sees valuable people in society (like friends, family, relatives, as well as colleagues, etc.) who think he or she should apply the technology (Venkatesh et al., 2012). Venkatesh et al. (2003) described that the social influence positively affects individu-


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als' objective to accept a new technology. Chiu et al. (2012) explored that the social influence defines how a person feels about adoption. Yang et al. (2012) elaborated that social influence impacts positively individuals' intention to adopt online payment. In keeping with the past study, De Luna et al. (2019) observed that social influence significantly affects the intention of people regarding the adoption of mobile payment systems. Wei et al. (2021) also used data to prove that young people's use of online payments is affected by their social circles. Hamari and Koivisto (2015) reported that the willingness of people to adopt innovation was positively affected by the society. All the previous studies shown that social influence have a positive effect on individuals' intention to adopt technology based financial services.

**Competitiveness** is stated as the capability of a firm to compete, to grow, and to be profitable (Fougner, 2008). David (2017) defines the competitiveness as anything that a group does to compete with another group. In other words, a company's competitiveness can be defined as the value it provides to its customers (or end users), which encourages those customers to purchase the company's products or services rather than those of its competitors and makes it difficult for actual or potential direct competitors to copy (Christensen, 2010). The price of financial services can go down if there is competition between domestic and foreign financial institutions (Guiso et al., 2004). Likewise, when there is more competition in the financial market, banks may be forced to come up with new ideas. This could be because they do not want to lose their market power (Fiordelisi et al., 2011). The competitive market can also make banks offer a wider range of services and products (Bos et al., 2013). A number of previous studies reported that commercial banks around the world are subject to serious competition (Al-Muharrami, 2009; Matthews et al, 2007; Al-Muharrami et al., 2006; Claessens & Laeven, 2004; and Belaisch, 2003). Likewise, Rootman et al. (2013) observed that competition in the banks around the world has been getting harder, making it hard for commercial banks to offer their customers the unique services and products they need. Fintech has the potential to make the conventional business model more effective by making it cheaper for banks to run their business, improving the service efficiency, boosting the risk control, as well as giving customers better customer-focused business models. This will make banks more competitive overall (Momaya, 2019; Panchal & Krishnamoorthy, 2019; Wang et al., 2021). Artificial intelligence, mobile technology, and blockchain through fintech can play a significant role in boosting competitiveness in commercial banks through improved customer services (Momaya et al., 2020).

It is possible to draw the conclusion that a large number of prior studies attempted to evaluate the impact of technological innovation in the banking sector with regard to customer service, bank profitability, and other aspects of the industry. However, there is still a lack of studies examining the impact of fintech adoption on financial performance of commercial banks, particularly in the developing countries like Pakistan. Therefore, this study aims to examine the effect of fintech adoption on the financial performance of commercial banks in Pakistan. This study also assesses the moderating role of social influence and mediating role of competitiveness on the relationship between fintech adoption and financial performance of commercial banks in the country.

Based on the literatures reviewed above, the current study develops the following hypotheses:

*H1: Competitiveness has a positive and significant impact on the financial performance of commercial banks in Pakistan.*

*H2: Fintech adoption has a positive and significant impact on the competitiveness of commercial banks in Pakistan.*

*H3: FinTech adoption has a significant and positive impact on the financial performance of commercial banks in Pakistan.*

*H4: Social influence has a significant and positive impact on the competitiveness of commercial banks in Pakistan.*

*H5: Social influence has a positive and significant impact on the financial performance of commercial banks in Pakistan.*

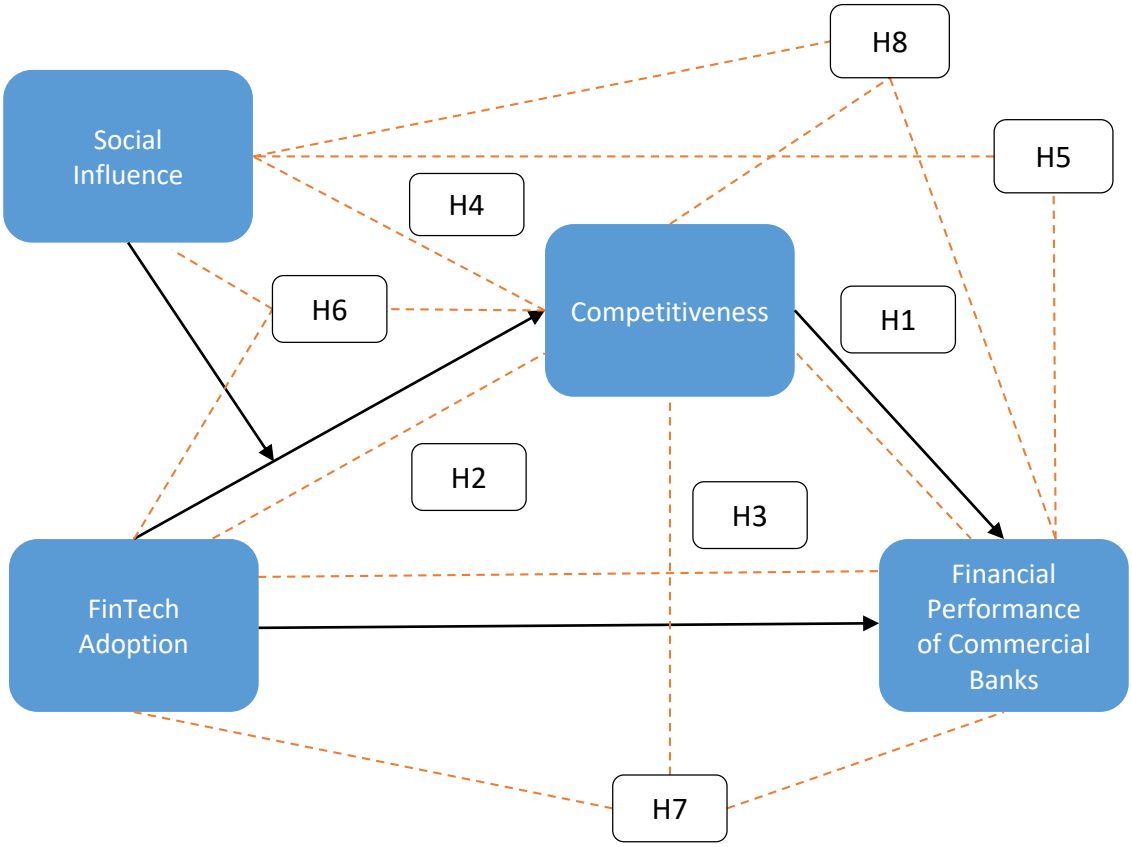



**Figure 1.** Research model and hypotheses

*H6: Social influence moderates the relationship between fintech adoption and competitiveness of commercial banks in Pakistan.*

*H7: Competitiveness mediates the relationship between fintech adoption and financial performance of commercial banks in Pakistan.*

*H8: Competitiveness mediates the relationship between social influence and financial performance of commercial banks in Pakistan.*

The proposed relationship among the variables in this study can be presented in a graphical format (see Figure 1). It is important to note that the solid black lines show the relationships (direct and indirect) among the variables. On the other hand, the doted lines indicate the proposed hypotheses.

## 2. METHOD

This study performed a cross-sectional survey to collect the primary data to fulfil its objective. The unit of analysis for this study was the bank's employees, particularly the bank's top and middle level management. Currently, a total of 22 commercial banks are performing in Pakistan. However, due to cost and time limitations, the study considered five large and most reputed banks, namely Allied bank Ltd., Habib Bank Ltd, Muslim Commercial Bank (MCB) Ltd, National Bank of Pakistan (NBP) Ltd and United bank Ltd. (UBL). Moreover, these five banks have a total of 7,376 branches that comprise of more than 50% of the total branches of all the commercial banks around Pakistan (KPMG Taseer Hadi & Co., 2020). The survey was conducted in the city of Lahore, Pakistan. Lahore is considered the second largest city and very important commercial hub in Pakistan. In addition, all the commercial banks have branches in this city. Since the size of the population of the study is very big, the Krejcie Morgan table was employed to determine the sample size. According to the table, the required sample size for this study was 367 respondents. The study employed a simple random sampling technique to select the respondents.

This study used a standardize and structured questionnaire to gather the data. The question-


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**Table 1.** Variables and their measurements

| Variable | Coding | Measurement Factors | Source |
|---|---|---|---|
| Fintech Adoption | FA1 | Fintech creates a new opportunity for banks to provide digital financial services | Dwivedi et al. (2021) |
| | FA2 | Fintech adoption in the Pakistan's commercial banks is usual | |
| | FA3 | Fintech supports to innovate new products and services for the commercial banks | |
| | FA4 | The banking rule and regulations in Pakistan are favorable for FinTech adoption | |
| | FA5 | Fintech adoption process is smooth for the banks | |
| | FA6 | Fintech adoption requires a strategic approach of the technology management in the operations of the banks | |
| | FA7 | Fintech adoption is encouraged by all the parties related to bank | |
| | FA8 | Fintech adoption creates new channels of providing banking services | |
| Competitiveness | COM1 | Fintech supports to decrease the cost of the financial transactions and the services for the customers. | Dwivedi et al. (2021) |
| | COM2 | Fintech increases the quality of services delivered | |
| | COM3 | Fintech supports to increase the productivity of the commercial banks | |
| | COM4 | Fintech supports to decrease the time of performing financial transactions as well as services | |
| | COM5 | Fintech supports to increase flexibility of performing financial transactions and services | |
| Social Influence | SI1 | The people who are very close and important to me think that I should make use of fintech in performing my banking transactions | Venkatesh et al. (2003), Kwon et al. (2007) |
| | SI2 | The persons who influence my behavior want that I should make use the fintech in performing my banking transactions | |
| | SI3 | The persons whose opinions I respect prefer that I make use fintech in performing my banking transactions | |
| Financial Performance | BP1 | Fintech supports to increase the revenue of the commercial bank | Dwivedi et al. (2021) |
| | BP2 | Fintech supports to increase the profit of the commercial bank | |
| | BP3 | Fintech supports to increase the growth of the commercial bank | |

naire was adopted and developed from previous studies (Dwivedi et al., 2021; Kwon et al., 2007). The questionnaire was divided into two sections: the first focuses on the demographic profile of the respondents and their organizations, while the second section shaded light on fintech adoption, social influence, competitiveness, as well as financial performance of Pakistan's commercial banks. The questionnaire in this study was structured on a seven-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (7).

The data were collected through an online-based survey from the selected respondents i.e., bank managers. Email ID and other contact details of the respondents were collected from the State Bank of Pakistan and WhatsApp community groups of bank managers. The questionnaire was sent to a total of 600 respondents via their respective email and requested them to participate in the survey. After one week, a reminder email was sent to the respondents and requested them to send the filled-up questionnaire back. The study received feedback from a total of 367 respondents. So, the sample size for the current study was 367 bank managers. The respondents provided their unbiased opinions and responses.

The current study included three factors such as fintech adoption (FA), competitiveness (COM), and social influence (SI) to measure the financial performance of Pakistan's commercial banks. The variables as well as their measurements are described in Table 1.

# 3. DATA ANALYSIS AND RESULTS

## 3.1. Demographic profile of the respondents

Table 2 shows the demographic profile of the survey participants. It can be seen that nearly two third of the respondents were male, while the females consisted nearly 38% of the total respondents. If the age distribution of the respondents is taken into consideration, it can be seen that a significantly greater portion (46.6%) of the respondents were in the range of 40 years and above. Nearly 36.8% of the respondents were in the age

bracket of 31-40 years. On the other hand, the proportion of the respondents getting 21-30 years was found to be significantly low (16.6%).

**Table 2.** Demographic profile of the respondents

| Demographics | Frequency | (%) |
|---|---|---|
| **Gender** | | |
| Male | 228 | 62.1 |
| Female | 139 | 37.9 |
| **Age group** | | |
| 21-30 years | 61 | 16.6 |
| 31-40 years | 135 | 36.8 |
| 40 years & above | 171 | 46.6 |

## 3.2. Assessment of the measurement model

The outer factor loadings for the full measurement model for this study are shown in Figure 2. The analyses revealed that all the items had values significantly greater than the minimum threshold of 0.70. The findings indicate that the outer factor loadings are sufficient to allow the model of this study to fit into the framework (Figure 2). So, it is possible to apply the model to the next phase of analyses: reliability and validity test.

The study conducted reliability analysis for the items under each of the variables (Table 3). It was found that the composite reliability score for each variable was above the threshold level of 0.7 (Sarstedt et al., 2019) and ranged from 0.743 to 0.901. The findings indicate the high reliability measurement scales of the variables. This suggests that the scales fulfilled the criteria. In other words, all the variables in this research model are reliable.

The study measured average variance extracted (AVE) to calculate the convergent validity of the constructs (Table 4). The findings revealed that the AVE score for each of the variables exceeded the recommended threshold level of 0.50 (Hair et al., 2017) and ranged from 0.614 to 0.761. The results established the convergent validity of the constructs. In other words, the scale satisfies the convergence value and hence the convergent validity of the model is assured.

The Fornell-Larcker criterion was applied to evaluate the discriminant validity of the constructs (Table 5). It was found that the square root of AVE for every construct was greater than the correlations of the latent construct. The findings suggest

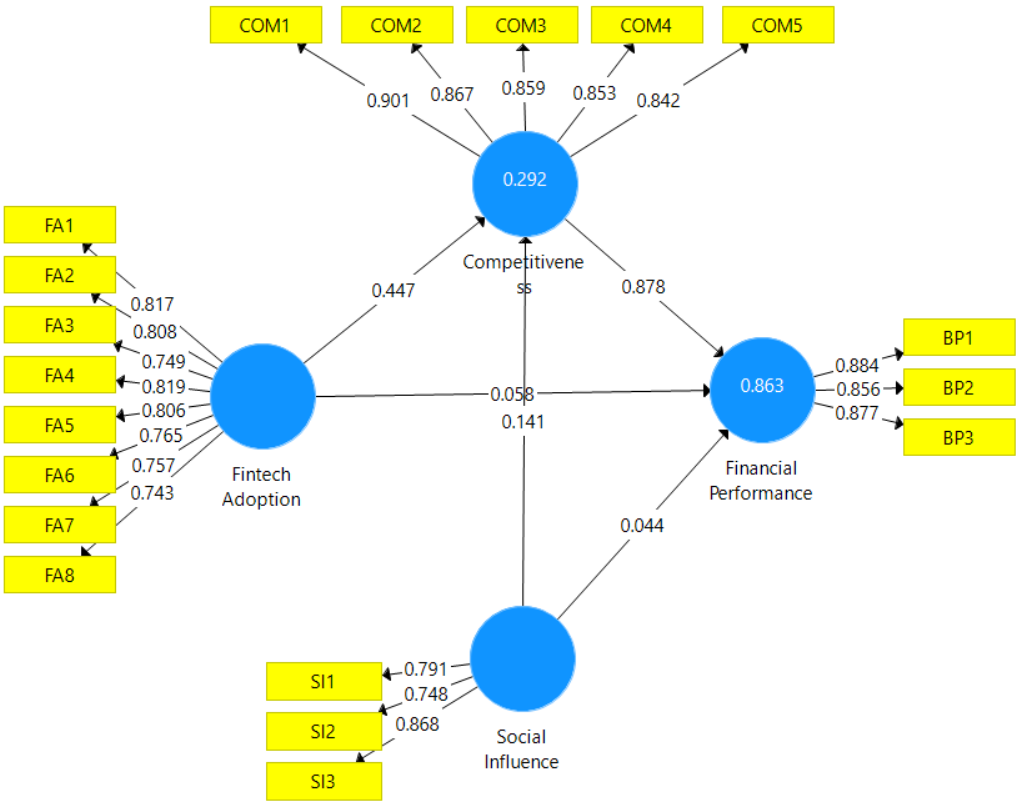



**Figure 2.** Assessment of the measurement model


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that all the constructs meet the required criterion prescribed by Fornell and Larcker (1981). This indicates that there is no defect in the measurement model of the study. In other words, the factors taken in the present study achieved the discriminant validity.

**Table 3.** Summary findings of reliability of the constructs

| Construct | Items | Loadings | Composite Reliability (CR) |
|---|---|---|---|
| FinTech Adoption | FA1 | 0.817 | 0.927 |
| | FA2 | 0.808 | |
| | FA3 | 0.749 | |
| | FA4 | 0.819 | |
| | FA5 | 0.806 | |
| | FA6 | 0.765 | |
| | FA7 | 0.757 | |
| | FA8 | 0.743 | |
| Social influence | SI1 | 0.791 | 0.845 |
| | SI2 | 0.748 | |
| | SI3 | 0.868 | |
| Competitiveness | COM1 | 0.901 | 0.937 |
| | COM2 | 0.867 | |
| | COM3 | 0.859 | |
| | COM4 | 0.853 | |
| | COM5 | 0.842 | |
| Financial Performance | BP1 | 0.884 | 0.905 |
| | BP1 | 0.856 | |
| | BP1 | 0.877 | |

**Table 4.** Assessment of convergent validity

| Construct | Average Variance Extracted (AVE) |
|---|---|
| FinTech Adoption | 0.614 |
| Social influence | 0.647 |
| Competitiveness | 0.747 |
| Financial Performance | 0.761 |

## 3.3. Assessment of the structural model

PLS-SEM algorithm and bootstrapping approach were applied to assess the structural model of the study. Figure 3 shows the relationships (i.e., paths) among the exogenous constructs and endogenous constructs. In the structural model assessment of this study, all the direct relationships (i.e., direct hypotheses) were tested. The study also assessed the mediation as well as moderation effect between the constructs as described below.

To investigate the direct relationships (i.e., direct hypotheses) among the constructs, the bootstrapping method (500 sub samples) was used in Smart PLS 3. The findings related to hypothesis testing are shown in Table 6. The findings show that the first hypothesis (*H1*) is accepted, indicating that the relationship between competitiveness and financial performance of Pakistan's commercial banks is positive and significant (beta value = 0.878; t = 33.216; p = 0.000 and p < 0.05). Similarly, the second hypothesis (*H2*) is accepted (beta = 0.501; t = 7.689; p = 0.000 and p < 0.05), indicating that fintech adoption (FA) has a significantly positive impact on competitiveness of banks. This study found a positive and significant impact of fintech adoption (FA) on the financial performance of commercial banks, highlighting that the third hypothesis (*H3*) is accepted (beta = 0.058; t = 1.756; p = 0.040 and p < 0.05). The fourth hypothesis (*H4*) showing the relationship between social influence and competitiveness of the banks is also accepted (beta = 0.213; t = 3.316; p = 0.000 and p < 0.05). However, the study found a positive but insignificant relationship between social influence and financial performance of the banks (beta = 0.044; t = 1.446; p = 0.074 and p > 0.05). Therefore, the fifth hypothesis (*H5*) of the study is rejected.

The findings related to moderation and mediation effect are demonstrated in Table 6. The findings showed that social influence had a positive and significant moderation impact on the relationship between fintech adoption and competitiveness of commercial banks (beta = 0.081; t = 1.943; p = 0.026 and p < 0.05). Therefore, hypothesis related to the moderation impact (i.e., hypothesis *H6*) is accepted. In addition, the study found a positive

**Table 5.** Discriminant validity matrix using the Fornell-Larker approach

| Construct | Competitiveness | Fin Performance | Fin. Adoption | Social Influence |
|---|---|---|---|---|
| Competitiveness | 0.865 | – | – | – |
| Fin Performance | 0.726 | 0.872 | – | – |
| Fintech Adoption | 0.528 | 0.546 | 0.784 | – |
| Social Influence | 0.398 | 0.427 | 0.576 | 0.804 |

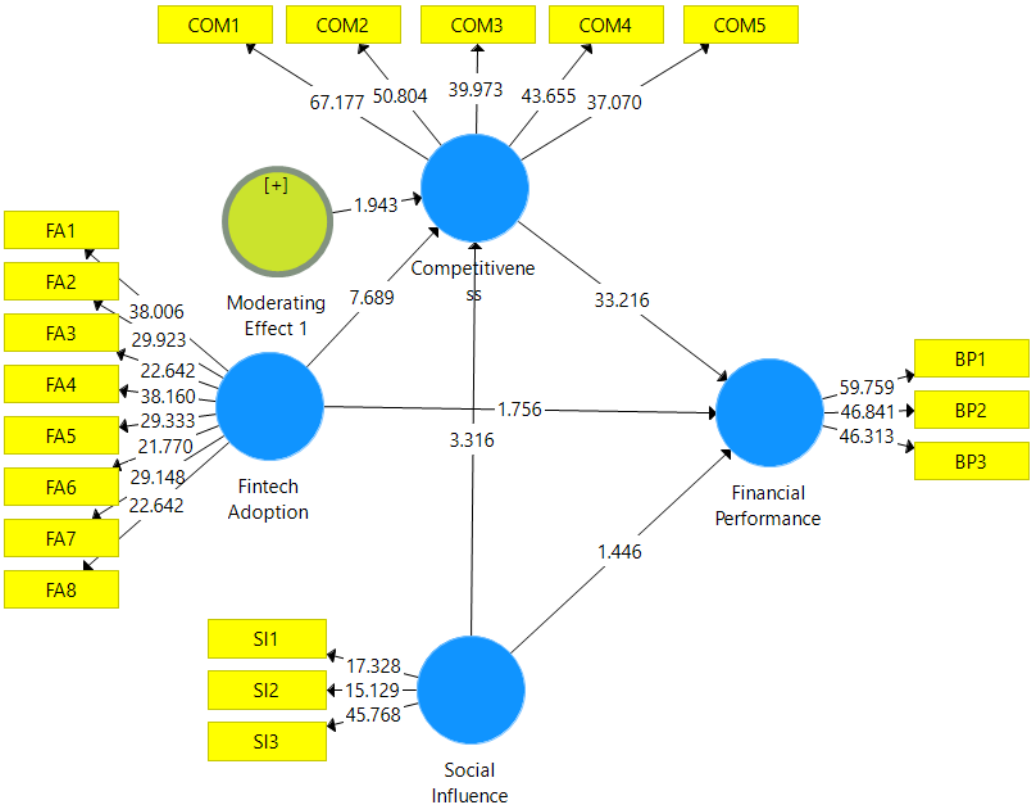



**Figure 3.** Assessment of the structural model

**Table 6.** Summary findings of hypothesis testing

| Relationship | Std. Beta | Std. Error | t Values | p Values | 5.0% | 95.0% | Decision |
|---|---|---|---|---|---|---|---|
| COM → FP | 0.878 | 0.874 | 33.216 | 0.000 | 0.830 | 0.915 | Accepted |
| FA → COM | 0.501 | 0.502 | 7.689 | 0.000 | 0.387 | 0.609 | Accepted |
| FA → FP | 0.058 | 0.062 | 1.756 | 0.040 | 0.003 | 0.111 | Accepted |
| SI → COM | 0.213 | 0.217 | 3.316 | 0.000 | 0.093 | 0.305 | Accepted |
| SI → FP | 0.044 | 0.043 | 1.446 | 0.074 | -0.012 | 0.090 | Rejected |
| FA → SI → COM | 0.081 | 0.079 | 1.943 | 0.026 | 0.014 | 0.149 | Accepted |
| FA → COM → FP | 0.440 | 0.438 | 8.253 | 0.000 | 0.343 | 0.522 | Accepted |
| SI → COM → FP | 0.187 | 0.189 | 3.381 | 0.000 | 0.086 | 0.268 | Accepted |

and significant mediation effect on the relationship between competitiveness and financial performance of banks (beta = 0.440; t = 8.253; p = 0.000 and p < 0.05). This indicates that the seventh hypothesis (i.e., hypothesis *H7*) of the study is supported and accepted. Similarly, the mediation impact of competitiveness on the relationship between social influence and financial performance of banks was found to be positive and statistically significant (beta = 0.187; t = 3.381; p = 0.000 and P < 0.05). Therefore, the eighth hypothesis (i.e., hypothesis *H8*) of this study is accepted.

## 4. DISCUSSION

The current study revealed that competitiveness in commercial banks had a positive and significant impact on the financial performance of Pakistan's banks. The results suggest that the adequate level of competitiveness in commercial banks can contribute to improving the financial performance of the banks. Previous studies also revealed a positive relationship between competitiveness and financial performance of commercial banks (Mirza et al., 2016; Momaya et al., 2020). The current


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study also found a positive and statistically significant relationship between fintech adoption and the competitiveness of banks. Therefore, it can be hypothesized that the adoption of fintech can play a beneficial role to banking institutions from the viewpoint of competition. In addition, a bank can expand its reach up to global level by merging its internal and external environments with the usage of fintech. In other words, a local bank can compete with other banks at the global level by providing technology-based financial services through the digital platform. A number of previous studies reported that the increase in fintech adoption plays a positive and significant role in increasing competitiveness in commercial banks (Kemunto & Kagiri, 2018; Momeni et al., 2013).

The analysis of the current study showed a statistically significant association between fintech adoption and financial performance of commercial banks. The findings indicate that the adoption of fintech can make a significant contribution to the financial performance of Pakistan's commercial banks. In other words, the adoption of fintech in the banking sector of Pakistan can be a strategic move that can assist in improving their financial performance. The direct influence of fintech adoption on the financial performance of banking institutions had also been revealed by previous studies (Hannoon et al., 2021; Klingebiel, 2000).

This study also revealed a positive and statistically significant association between social influence and competitiveness of commercial banks in Pakistan. The findings indicate that social influence positively affects people's intention to adopt and use innovative and technology based financial services provided by banking institutions, which ultimately contributes to enhancing the competition in commercial banks. Prior studies also found a significant link between social influence and competitiveness in the financial sector (Eyasu & Arefayne, 2020; Petrovic-Randelovic et al., 2015). However, a positive but insignificant association between social influence and financial performance of banks was observed by the current study. The results indicate that social influence has no direct effect on the financial performance of commercial banks. The studies by Naeem (2020), Fedorko et al. (2021), and Mittal et al. (2008) also revealed similar findings.

In addition, the study found that social influence has a positive and significant moderating impact on the association between fintech adoption and competitiveness of commercial banks in Pakistan. Almost similar findings were observed by several previous studies (Wei et al., 2021; Lan & Giang, 2021: Eyasu & Arefayne, 2020; Esteban-Sanchez et al., 2017). Moreover, a positive and statistically significant mediating impact of competitiveness on the relationship between fintech adoption and financial performance of commercial banks was found. The findings indicate that the mediation impact of competitiveness can make a significant contribution to the banks. The study by Dwivedi et al. (2021) and (Kiilu, 2018) also reported similar findings. In addition, the current study revealed a positive and significant mediation effect of competitiveness on the relationship between social influence and financial performance of banks. Similar and comparable findings were observed by other studies as well (Ferri & Pedrini, 2018; Saeidi et al., 2015).

From the above discussions, it can be said that the adoption of fintech in the banking industry of Pakistan has a very high potential to enhance competitiveness and consequently financial performance of commercial banks.

## CONCLUSION

The purpose of this study is to assess the impact of fintech adoption on financial performance of commercial banks in Pakistan. The study also aims to conduct a comprehensive moderated mediation analysis on fintech adoption, social influence, competitiveness, and financial performance of Pakistani commercial banks. It was revealed that the adoption of fintech had a positive and significant effect on financial performance of commercial banks in Pakistan. The study also found a significant effect of social influence on the competitiveness of banks. In addition, the analyses showed that competitiveness had a significant indirect impact (i.e., mediation) on the adoption of fintech and hence financial performance of banks.

The findings of this study suggest that proper implementation of fintech in banking activities can make a significant contribution to enhancing competitiveness in the banking sector. Subsequently, an adequate level of competition in banks can play a very important role in improving the financial performance of banks. The study findings might provide a better insight and understanding about fintech adoption, social influence, competitiveness, and financial performance issues of commercial banks. In addition, empirical evidence of the study might be beneficial for the top management of the banks to design more innovative, and technology-based financial products and services to better serve their customers. Finally, the study findings might be valuable to policy makers, government regulators, and other related parties to design and implement more effective policies and regulations for higher adoption of fintech to ensure improved health of Pakistani commercial banks in the long run.

## AUTHOR CONTRIBUTIONS

Conceptualization: Aamir Hussain, Md Shahin Mia.
Data curation: Aamir Hussain, Ferdoushi Ahmed.
Formal analysis: Aamir Hussain, Ferdoushi Ahmed.
Methodology: Aamir Hussain, Md Shahin Mia.
Project administration: Md Shahin Mia, Paratta Prommee.
Software: Aamir Hussain, Md Shahin Mia.
Supervision: Md Shahin Mia, Paratta Prommee.
Validation: Md Shahin Mia, Paratta Prommee.
Visualization: Aamir Hussain, Ferdoushi Ahmed.
Writing – original draft: Aamir Hussain, Md Shahin Mia.
Writing – reviewing & editing: Ferdoushi Ahmed, Paratta Prommee.

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