Fintech- a solution for financial inclusion and women's economic empowerment?

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Abstract

Financial Inclusion seems to be the light at the end of the tunnel to achieve the Millennium Development Goals (MDGs) which can eradicate poverty and help people to come out of abject poor conditions. Financial Technology (FinTech) is spreading at a fast pace and being accessed by the masses. Thus, this technological innovation which helps to deliver financial services more conveniently and efficiently can hold the key for financial inclusion and women empowerment through financial inclusion. This study used data from the World Bank's 2017 Global Findex report and tried to find a relation between FinTech and financial inclusion from 144 countries. A few parameters from the report were taken to measure the financial inclusion variable and some indicators were selected to assess the FinTech reach. The results suggested that there is a strong relationship between the independent variable FinTech and the dependent variable financial inclusion for the whole population and women population alone. The study also found that low-income countries are financially excluded while high-income countries are more inclusive except few exceptions. The study will help to understand the impact of FinTech on the inclusion of the excluded population from the financial system and can act as a solution for reducing poverty and women's empowerment.

Keywords: Fintech; Financial inclusion; women empowerment; banking.

1. Introduction

Fintech and financial inclusion have gained a lot of consideration in the last few decades because of persistent poverty and FinTech applications reaching to a large population. FinTech can be seen as a weapon to combat financial exclusion. World Bank has started an interesting debate in support of financial inclusion which they see as a solution for poverty eradication in developing as well as abject poor nations. A FinTech provider can be defined as a financial service provider that uses a platform of technology, whether online (internet) or offline (SMS), to provide novel financial services or to provide an advanced version of existing financial services. FinTechs offer similar services as banks, perhaps more proficiently with the help of technological abilities, but in a diverse and customized way (Navaretti et al., 2018). FinTech can help in economic inclusion. It is targeting the segment of the population which was excluded previously. FinTech can be seen to have the potential to end the problem of financial exclusion (strategy, 2016). Fintech is providing a diverse range of services that previously banks and other financial institutes were providing thus posing a threat to these institutions. The extent of the danger to the financial sector is summed up in the statement below:

> *“The aim is to inflict death by a thousand cuts. Fintech start-ups are nimble piranhas, each focusing on a small part of a bank’s business model to attack” (Financial Times, 13 November 2015).*

Financial inclusion is defined as the use of the formal financial system by the marginal and abject poor population (Beck, Demirgu¨c-Kunt, & Levine, 2007; Bruhn & Love, 2014; Ozili, 2018). Sarma (2008) states financial inclusion as “a process that ensures the ease of access, availability, and usage of the formal financial system for all members of an economy”. In a similar strain, Cámara and Tuesta (2014) describe an inclusive financial system as “one that maximizes usage and access, while minimizing unintentional financial exclusion”. Financial inclusion provides a cushion against sudden tremors over unexpected crises such as chronic disease, loss of employment, death, or major investment (Collins et al., 2009).

2. Literature Review

The term FinTech is a buzzword coined from two words ‘Financial Technology’ and defines Internet-based technologies like cloud computing or mobile Internet- with conventional business models of the banking and financial industry -e.g. money lending or transaction banking. FinTech companies provide innovative financial products, business models, financial software, and financial customer services under the umbrella of digital finance (Gomber et al., 2017). However, the Financial Stability Board defines FinTech as “technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services”. FinTech has challenged the older and conventional ways of raising and distributing funds by harnessing the capability of technology and innovation (Salampasis & Mention, 2018). There is a swing within the financial service landscape towards the social benefits with economic benefits (Shrier et al., 2016). Citigroup (2016) published a report stating that high mobile penetration among the weaker and unbanked sections of society has made FinTech so important. Crowdfunding, which is part of FinTech, also helped to embrace a large crowd to contribute financially towards a project or a cause and thus increases the inclusion of more population in the Financial System (Baber, 2019).

There are various benefits of financial inclusion persons who were earlier financially excluded will be in a position to invest in education, and empowered to start a business, which will eventually lead to a reduction in poverty and financial growth of individuals (Ellis, Lemma, & Rud, 2010; Han & Melecky, 2013). Klapper and Singer (2014) in their study stated that access to the financial system can help to remove poverty, create jobs, induce high consumption, encourage savings and investment, and help to absorb financial shocks. Allen et al. (2016) revealed that the most financially excluded segments of the population were women, poor, and people living in far rural. Ghosh and Vinod (2017) studied financial inclusion in

India and found that the women population is still financially excluded than men. Grohmann, Klühs, & Menkhoff (2018) studied the association between financial inclusion and financial literacy and used four parameters to study financial inclusion which includes saving account at a formal financial institution, account ownership, debit card ownership, and using a debit card in the last year. Turégano, & Herrero (2018) used a single parameter which is the percentage of adults in the population holding a bank account for household-related financial inclusion.

Ozili (2018) studied the impact of digital finance on financial inclusion and financial system stability. The study believes that there may be a positive relationship between easy access to digital financial services and financial inclusion; which means there exists an implied positive relationship between high-income users and digital finance while there may be a loose or even negative association for low-income and poor users of digital finance. This study suggests that digital finance can propagate and promote financial inclusion as financial services can be delivered to more people, around 50% of people own mobile phones and have internet. Also, such services are affordable, convenient, and secure to a segment of the population who were not included in the formal financial system before. Financial inclusion through technology makes provision for banks to lower costs by reducing waiting on a branch, reducing documentation, and reducing the number of branches (Manyika et al., 2016). The CGAP (Consultative Group to Assist the Poor) delineates digital financial inclusion as “digital access to, and the use of, formal financial services by the excluded and underserved population” (CGAP, 2015). Several FinTech companies are offering low-cost services, which mainly target “unbanked” clients, both in developed and developing countries, thus encouraging financial inclusion (Navaretti et al., 2018). FinTech is guaranteed to play an integrative role in the expansion of far-reaching value propositions innovative financial services, and products tailored for the unbanked part of the society (Richardson, 2016). Salampasis & Mention (2018) studied the World Bank’s report on Global Findex and compared the population having a bank account in 2011 and 2014. The study found a significant increase in the percentage of the population and credited technology advances particularly mobile phone technology and innovation for such inclusive change. Biggs (2016) explained the potential of crowdfunding and digital currency to provide easy access to financial services to unbanked people. FinTech could open doors for unbanked sections of the population and developing countries (Vives, 2017). China which is practicing Internet Finance shows a positive attitude toward bringing the excluded population within the financial system and the growth of FinTech has been appreciated while being inclusive in character (Xiang, Lina, Yun, & Chengxuan, 2017).

Honohan (2008) suggested checking financial inclusion by measuring the percentage of the population using financial services from formal institutions. Fungácová and Weill (2015) concluded in their study that rich, educated, and people above 35 years are more inclusive than the poor, uneducated, and young people. Demirgüc-Kunt et al. (2013b) used the World Bank Global Findex Report 2012 to suggest that there is a wide gap between men and women in financial inclusion and concluded that men are more likely to be more inclusive. Allen et al. (2016) analyzed the same data from 2012 and studied the demographic characteristics of the world population. The paper aims to study the impact of FinTech on financial inclusion on the whole population and women's financial empowerment separately.

3. Data

Data from 144 countries are taken from the World Bank's 2017 Global Findex report to analyze the financial inclusion and FinTech dimensions. The report was formed through the representatives in every 144 countries of Gallup, Inc., which is a partner firm for doing the survey. The data used a sample of more than 150,000 adults of 15 years and above age. The Findex report comprises the various indicators that explain the percentage of the population using financial services provided by the bank or financial institute. The report shows that since 2011 around 1.2 billion populations above 15 years of age have got an account. The report also revealed that the percentage of the population aged above 15 years who got an account in a financial institution or through a mobile money service between 2014 and 2017 has increased from 62% to 69%. Though it was higher in developing countries, the percentage rose from 54% to 63%. Women in developing economies who have a bank account are still behind men by 9 percent, which is a matter of concern (Demirgüç-Kunt et al., 2018).

For this study, financial inclusion is assessed on three parameters- the percentage of the population having account holders, savings accounts, and borrowing accounts. Account ownership means an individual or parties having an account either at a financial institution or through a mobile money provider. The savings account helps people to save money for impending expenses like a big purchase, funds for education or starting a business, needs in old age, or emergencies. Or, at the time of immediate expenses, rather than borrowing, people usually save money. A borrowing account is a loan account that provides money to buy a home or any large financial investment that people make in their life. The inclusion of Women in the financial system will be measured on the same parameters. FinTech is measured on four parameters which are- "the use of mobile to pay bills", "used a mobile phone or the internet to access a financial institution account", "made or received digital payments in the past year" and "received wages through a mobile phone".

4. Results

The 144 countries are classified into 4 categories by the World Bank report- Low income, lower middle income, upper middle income, and high income. The majority of countries are in the high-income (44) group followed by lower-middle-income and upper-middle-income equally (38) and then low-income countries (24) as in Figure 1.

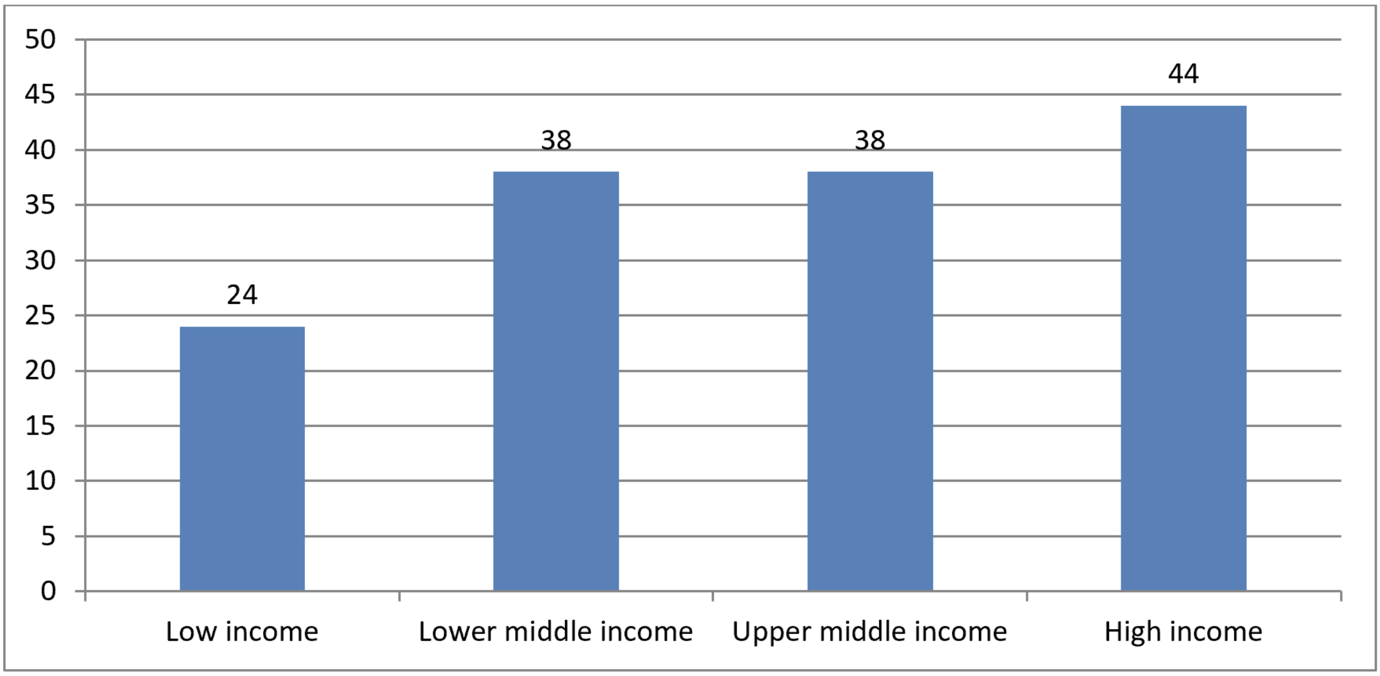

Figure 1. Number of countries in four income groups

In Table. 1 the financial inclusion mean percentage and standard deviation of each income group of countries are analyzed. In low-income countries, the mean is low for both the inclusion of the whole population and the women population. The standard deviation is less as compared to other groups so there are no outliers in this group. In a lower and middle-income group, the mean percentage is better than lower income and the standard deviation is more than the low-income group. In the High-income group, around 50% of women and the general population are financially inclusive but the standard deviation is around.10 which signifies that some countries in the high-income group have a low mean percentage. For example, countries like Uruguay, Saudi Arabia, Greece, Hungary, and Chile have only 30% of the population having financial access but belong to the high-income group. While countries like Canada, Sweden, New Zealand, and Norway have around 65-70% of the population accessing financial institutions. Some countries have achieved a 100% rate for women above 15 years of age holding an account in a bank or financial inclusion which are Denmark, Sweden, and Norway. There are countries like Pakistan, South Sudan, Afghanistan, and Morocco which belong to low-income and lower middle income where the financial inclusion percentage of the women population is less than 10%. There is a significant difference between the different income group countries in the case of financial inclusion in general and financial inclusion for females. This signifies that different income group countries are on different forefronts related to financial inclusion.

Table 1. Inclusion percentage of four income groups and ANOVA results

Income level		Financial Inclusion	Financial Inclusion (female)
Low income	Mean	.1628	.1380
	Std. Deviation	.06841	.06545
Lower middle income	Mean	.2239	.2013
	Std. Deviation	.08410	.09240
Upper middle income	Mean	.3013	.2782
	Std. Deviation	.09405	.09845
High income	Mean	.5179	.4981
	Std. Deviation	.09619	.10660
Total	Mean	.3240	.3017
	Std. Deviation	.16243	.16739
ANOVA table	F-Value	114.202	101.527
	Sig.	.000	.000

Table 2. Correlation between variables- FinTech and income level of countries with financial inclusion of whole population female population is analyzed. Fintech has a strong correlation with financial inclusion which means the use of mobile phones and the internet will increase financial inclusion. Thus, the penetration of technology among the masses and the population will result in the inclusion of such a population into a financial system that was left behind. The income level of a country has a good relation with financial inclusion which signifies that when the income level of people increases they are supposed to be more inclusive with the financial system and vice versa. Though relatively women population does not show such a strong correlation as the whole population does. There is a sufficient relation between FinTech with income level which means that increased use of mobile phones and the internet results in an increase in income level.

Table 2. Correlation between variables

		Financial Inclusion	Financial Inclusion in Female	Income level
1. FinTech	Pearson Correlation	.938**	.934**	.781**
	Sig. (2-tailed)	.000	.000	.000
2. Income level	Pearson Correlation	.803**	.788**	
	Sig. (2-tailed)	.000	.000	

***. Correlation is significant at the 0.01 level (2-tailed).*

Regression analysis was done on FinTech and financial inclusion in which both dependent variables have high beta values as shown in Table 3. There is a significant impact of FinTech on the Financial inclusion of the whole population and women population. The adjusted R-square value of financial inclusion of the whole population and women population is.88 and.873 which means around 87 % of the data fits the model which signifies the strong influence of FinTech on the process of including people in the formal financial system. Figure 2 and Figure 3 show the same strong relation graphically and the result trend line is linear and upward.

Table 3. Regression results

	Beta	t- value	Sig.	R	R Square
Financial Inclusion	.938	32.270	.000*	.938	.879
Financial Inclusion (Female)	.934	31.177	.000*	.934	.872

*The independent variable is FinTech. *P<0.01*

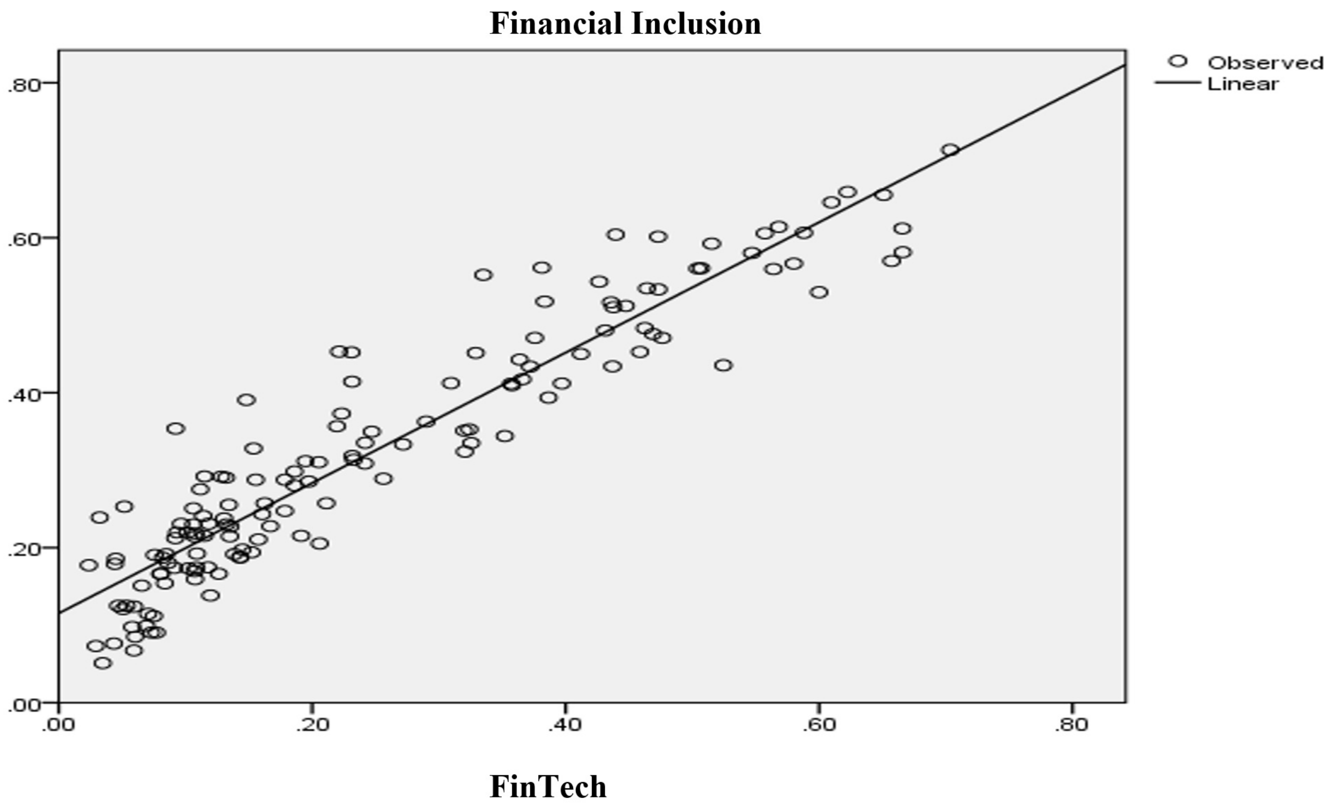

Figure 2. Correlations between FinTech and Financial Inclusion

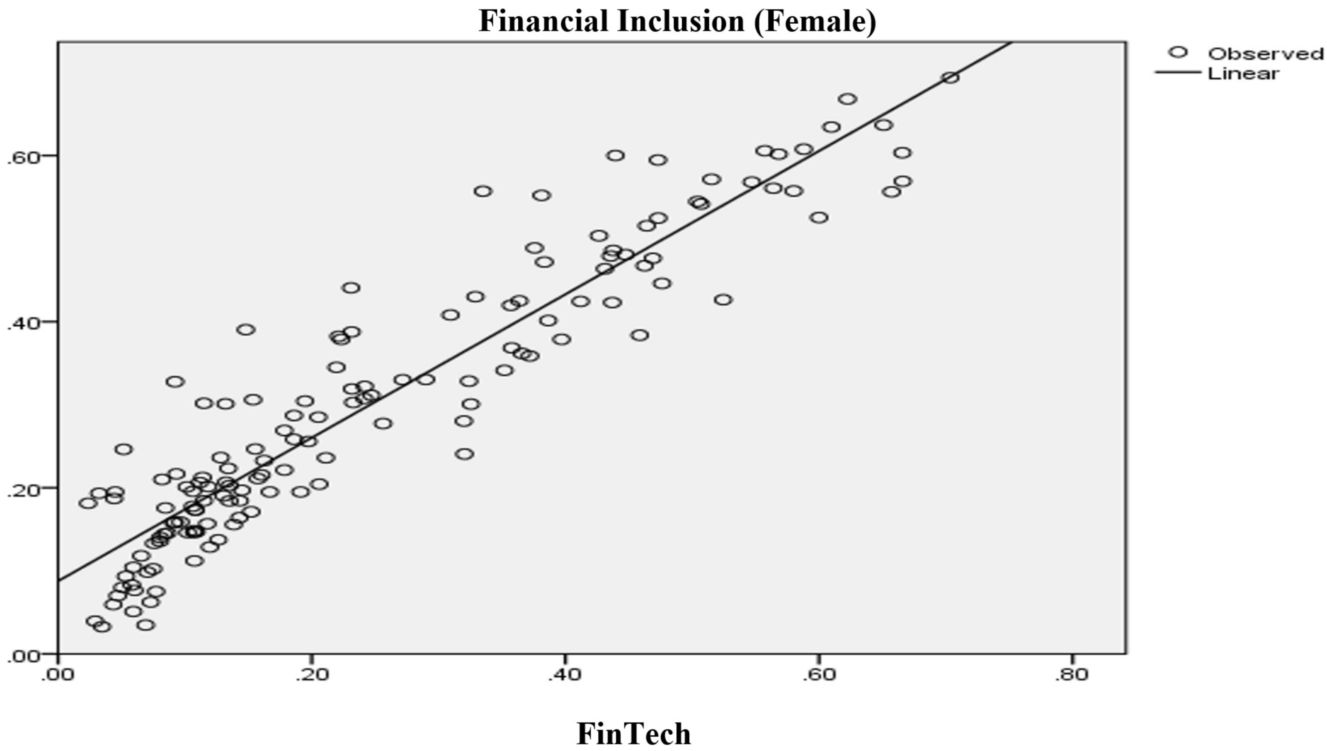

Figure 3. Correlations between FinTech and Financial Inclusion of Women Population

Table 4. ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Financial Inclusion * fintech	Between Groups	(Combined)	3.770	140	.027	32.474	.007
	Within Groups		.002	3	.001		
	Total		3.773	143			
Financial Inclusion Female * fintech	Between Groups	(Combined)	4.004	140	.029	38.881	.006
	Within Groups		.002	3	.001		
	Total		4.007	143			

Table 4 compared the means of dependent (financial inclusion) and independent (Fintech) variables using the ANOVA. The p-value here is always less than 0.05 which means there is much significant difference between the financial inclusions of the general population and women, particularly by the use of FinTech. This implies that the usage of fintech has differently influenced the populations and included them in the financial system.

Discussion and Conclusion

Fintech, short for financial technology, has revolutionized the financial industry in various ways, and one area where its impact has been particularly prominent is in crowdfunding (Baber, 2019a; Baber & Billah, 2022). Crowdfunding, the practice of raising funds for a project or venture by soliciting small contributions from a large number of people (Baber & Zaruova, 2018), has gained momentum in recent years, and fintech has played a crucial role in facilitating this process (Baber, 2019b; Fanea-Ivanovici & Baber, 2021a). Through innovative online platforms, fintech has made it easier for individuals and businesses to connect with potential investors, broadening the scope of fundraising possibilities (Fanea-Ivanovici & Baber, 2021b; Baber, 2019c). By leveraging technology, these platforms have streamlined the crowdfunding experience, offering user-friendly interfaces, secure payment systems, and efficient communication channels (Baber, 2019d; Deepa et al., 2021). Furthermore, fintech has not only empowered the entrepreneurs seeking funding but also the investors themselves (Baber, 2020a). With the help of advanced algorithms and artificial intelligence, fintech platforms carefully match potential investors with projects aligned with their interests and risk profiles, thereby enhancing the overall efficiency of the crowdfunding ecosystem (Baber, Kusumarani, & Yang, 2022). In addition, fintech has also addressed payment challenges by providing faster and more cost-effective remittance solutions, enabling seamless cross-border transactions (Baber & Fanea-Ivanovici, 2022; Baber et al., 2022). However, it is important to note that with the proliferation of crowdfunding opportunities, proper regulation and oversight are paramount to safeguarding the interests of both fundraisers and investors (Fanea-Ivanovici & Baber, 2022; Salem et al., 2022). Therefore, collaboration between fintech companies and regulatory bodies is crucial to strike a balance between innovation and consumer protection (Baber, 2021b; Baber, 2022). Ultimately, the intersection of fintech and crowdfunding promises to reshape the financial landscape, democratizing access to capital and fostering entrepreneurship on a global scale.

This study was done to check whether FinTech is helping countries raise the percentage of the population under the ambit of financial inclusion. Sarma & Pais (2008) explained financial inclusion as a progression that guarantees convenience, accessibility, and usage of formal financial services. It means that financial inclusion is the process of getting more population into the ambit of using financial services. More population must have an account in a financial institution, save money, and take a loan from the financial institution in their times of need. Demirgüc¸-Kunt and Klapper (2012) found that financial exclusion leads to abject poverty, and unemployment and acts as a barrier on the road to economic growth and development. The study also suggested that financial inclusion encourages investment in education, and better financial plans, and nurtures the environment of entrepreneurship. The findings of this paper are in support of (strategy, 2016) which believed that FinTech has the potential to include the excluded people from the financial system. High-income countries can invest in low-middle class and low-income countries in terms of technology and help to penetrate mobile phone technology in ruler and marginalized areas. Countries have to work on making communication and data technology access affordable to help people access financial institutions on mobile through the Internet. Financial inclusion cannot be achieved through micro-finance as it has become a kind of business. The intention of the micro-finance facility has changed from welfare to profit-making as micro-credits have to turn into loan sharks. So financial inclusion can only be achieved by adopting the technology and making it accessible to every individual. Though the definition of FinTech is not clear most authors agree that FinTech has commonalities like payment, financing means credit or loan, advisory services, and compliance. Based on these commonalities four factors were selected from the report to measure the FinTech variable. All these indicators were using a mobile phone or internet to pay or receive wages, payments, bills, and access financial institution accounts. The women population is more excluded from the financial system than the men population

(Zins & Weill, 2016; Demirgüc¸-Kunt et al., 2013a). Financial inclusion promotes women's empowerment. (Schurmann and Johnston, 2009; Islam et al., 2015; Siddik, 2017). In this study, it was found that the women population is almost equally influenced and getting included in the rise in FinTech as their counterparts do, which means that FinTech has the potential to reduce the gender gap in the financial system and also help to empower women. Countries like Pakistan, South Sudan, Afghanistan, and Morocco have low inclusion of females in their formal financial structure because of their conservative culture about women going out. FinTech can also solve this problem in these countries as mobile banking and other services are easily accessible from home and will help women access financial services without going out to the bank or financial institution.

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