A STUDY ON IMPLICATIONS OF GENDER GAP IN DIGITAL FINANCIAL LITERACY AND FINANCIAL INCLUSION FOR WOMEN ENTREPRENEURS IN PUNJAB, PAKISTAN

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ABSTRACT

This study aims to estimate the degree of financial literacy in men and women in Pakistan; analyse gender gap in financial literacy and digital financial literacy among entrepreneurs in Punjab; evaluate the gender gap in financial inclusion among entrepreneurs in Punjab; and assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab by using a mixed method approach. The first objective has been addressed using secondary data from the World Bank's Global Findex database, revealing a significant gender gap in financial literacy. Results show that only 21% of individuals in Pakistan have a bank account, with a mere 13% of women having access to formal banking services, highlighting a substantial gender disparity in financial inclusion. Furthermore, Pakistan ranks among the lowest in account ownership among low-middle-income countries, with a significant gap between men and women. Primary data has been collected through a structured questionnaire for addressing the remaining objectives. Sampling was done in two steps using PSLM microdata 2019-20. As a first step, target district was selected from Punjab based on its high proportion of female entrepreneurs as evident from analysis of PSLM microdata 2019-20 and as a second step, number of respondents for data collection were selected. The district of Faisalabad was randomly selected for data collection. Total sample size was 237, where number of women was 100 (42 percent) and those of men was 137 (round 58 percent) male and 42 percent female entrepreneurs indicating a slightly higher proportion of male respondents. There was a statistically significant gender gap in financial literacy, digital financial literacy as well as in financial inclusion among entrepreneurs in Punjab. Women had lower levels of financial literacy, digital financial literacy and financial inclusion compared to men. The study revealed that digital financial literacy has a positive impact on financial inclusion for entrepreneurs. The study recommends targeted interventions for female entrepreneurs for promoting their financial literacy, and digital financial literacy so that they may have better financial inclusion for getting financial benefits from formal financial institutions. Doing so policymakers can contribute to the economic empowerment of women entrepreneurs in Punjab.

PREFACE

This study examines the gender gap in digital financial literacy and financial inclusion among women entrepreneurs in Punjab, Pakistan. Despite their economic contributions, women face challenges in accessing financial services due to limited digital literacy, cultural barriers, and lack of access to technology.

Funded by the Research and Development Fund (RASTA PIDE), this research aims to understand the extent of the gender gap, its impact, and identify solutions to address these disparities. We hope to provide insights and recommendations for policymakers and stakeholders to promote digital financial inclusion and financial literacy among women entrepreneurs, empowering them to participate in the digital economy and contribute to Pakistan's economic growth.

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ABBREVIATIONS

ICT	Information and Communications Technology
WB	World Bank
PSLM	Pakistan Social and Living Standards Measurement
OECD/INFE	The Organization for Economic Cooperation and Development/ International Network on Financial Education
USA	United States of America
UN	United Nations
COVID-19	Corona Virus Disease of 2019
IMF	International Monetary Fund
UNEN	The United Nations Economist Network
UNDESA	The United Nations Department of Economic and Social Affairs
ZTBL	Zarai Taraqiati Bank Limited
SBP	State Bank of Pakistan
NGO	Non-Governmental Organization
PBS	Pakistan Bureau of Statistics
GoP	Government of Pakistan
HIES	Household Integrated Economic Survey
PIHS	Pakistan Integrated Household Survey
ATM	Automated Teller Machine
PLS	Profit and Loss Sharing (Account)

INTRODUCTION

This section provides rational, scope, objectives and approach of the study. It provides insights into the concepts of financial literacy, digital financial literacy, and digital financial literacy with special reference to entrepreneurs. The first sub-section addresses financial literacy, the next sub-section is about digital financial literacy, the third sub-section is on entrepreneurship and digital financial literacy, the fourth sub-section discusses financial literacy, financial inclusion and economic growth. The fifth sub-section is about gender gap in financial literacy and financial inclusion. The second last sub-section presents objectives of the study and the last sub-section is focuses on relevance of the study with public policy.

1.1 Financial Literacy

The Organization for Economic Cooperation and Development/ International Network on Financial Education (OECD/INFE) (2022) defines financial literacy as 'a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing'. Financial literacy has several elements, like practices related to saving, credit, earning, financial technology, interest and protection. Understanding of the concept of financial literacy is subject to occupation and the level of income (Remund, 2010). There is a wide array of definitions to the term 'financial literacy'. These definitions generally imply the ability of individuals to make decisions to ensure their financial wellbeing (Kawamura et al., 2021; Goyal and Kumar, 2021 and Klapper et al., 2020) and financial decisions both at the individual and firm level. Initial work on financial literacy dates back to early 1990s in the United States of America (USA). The idea developed later on in various form, where many studies proposed different measures to gauge the financial literacy. For instance, Lusardi and Mitchell (2005) operationalised this concept as interest compounding, inflation and risk diversification. According to Hussain et al. (2018), financial literacy can both be external or internal A number of studies found in literature attempt operationalising instruments to analyse financial literacy (for instance, Lusardi and Mitchell, 2005; OECD/INFE, 2011&2012; Guest, 2013 and Atkinson& Messy, 2012). Guest (2013) raises questions on the available definitions of the concept of financial literacy, which leaves question on its measurement. Which suggests researchers to keep working on development of new measures for defining financial literacy.

The uncertain economic condition prevailing internationally has intensified the need for paying attention to the matter of financial literacy. There are a number of factors reported to be responsible for influencing financial literacy including the marital status (Brown and Graf (2013); and Grable et al., 2007), level of education (Grohmann et al., 2015; Agarwalla et al., 2015; Cole and Shastry, 2009; and Lusardi and Tufano, 2015), pursuing studies in a business major (Chen and Volpe, 1998; Beal and Delpachitra, 2003;), having high score in mathematics (Agarwal and Mazumder, 2013), financial socialisation by schools and parents (Grohmann et al., 2015 and Hira et al., 2013), and financial self-efficacy (in case of Australian women) (Farrell et al., 2016). Effectiveness of the economic polices is important for developing financial institutions and improving financial literacy (Grohmann and Menkhoff, 2015). Literature review reveals the impact of behavioural variables on financial literacy (Shim et al., 2009; Gaurav and Singh, 2012; Agarwal and Mazumder, 2013; Hira et al., 2013; Grohmann et al., 2015; Farrell et al., 2016). Research being done at global level reveals low levels of

financial literacy among individuals (see for instance, Atkinson and Messy, 2012; Beal and Delpachitra, 2003; Chen and Volpe, 1998; Lusardi and Mitchell, 2007; and Mandell, 2008). This lapse in financial literacy raises concerns among policymakers across different countries (Van Rooij et al., 2011). However, there attempts are far less than what might be sufficient to address the grave consequences of financial illiteracy. Punjab stands first in ranking among provinces in terms of literacy rate in Pakistan, and it is perceived that literacy helps to develop financial literacy. Nonetheless, literature is limited on this aspect where literacy is either used as proxy for financial literature or one of its determinants (Chen and Volpe, 2002; Xu and Zia, 2012). Punjab is suitable to test this proposition whether literacy leads to financial literacy or not. Hence, that case of Punjab makes this project relevant.

1.2 Digital Financial Literacy

In order to secure an ideal financial status, understanding the complex financial products, having knowledge of financial technology like crowdfunding, blockchain, electronic payments and budgeting application etc. and grasping the ever-growing financial markets are requisites of the current times. Digital literacy without financial literacy is however dangerous if there is quest to improve financial resilience at the household level (Lyons, 2022) and all other levels. The internet revolution of this era has shaped financial literacy into digital financial literacy. Financial literacy and digital financial literacy concepts are seemingly similar, nevertheless there are essential difference in their conceptualisation (Lyons and Hanna, 2021; and Goyal and Kumar, 2021). Digital financial literacy is a combination of knowledge, skills, attitudes and behaviours necessary for individuals to be aware of and safely use digital financial services and digital technologies with a view to contributing to their financial well-being. It helps people in getting engaged with digital tools of payments. Role of digitalization and ICTs are found to be helpful in reducing the gender gap and improving living standards of women entrepreneurs (Hilbert, 2011). However, limited literature is available on role of digital financial literacy in improving women's financial inclusion (like Kofman and Payne, 2021; Azeez and Akhtar, 2021). Most of these studies explain the role of financial literacy in improving women's financial inclusion. Given the difference in concepts of financial literacy and digital financial literacy (Lyons and Kass-Hanna, 2021), there is a dire need to study the impact of digital financial literacy among women entrepreneurs on their financial inclusion.

1.3 Digital Financial Literacy and Entrepreneurship

Financial literacy aids in calculating household budget and it facilitates entrepreneurs to be more creative while using financial products like credit/debt, budget management, procurement of inputs, production, calculating fixed and variable costs, and inventory usage (Reich and Berman, 2015). It shapes attitude towards spending and saving and helps securing the financial future (Jang et al., 2014). Bire et al. (2019) reports that financial literacy is also very useful for the financial institutions. Female entrepreneurs face challenges if lack access to financial resources (Chowdhury et al., 2018), they are particularly not expert in accessing formal financial institutions (Cumming and Vismara (2017). Their challenges increase due to the fact that they mostly do not own property (Abdul-Rahman and Nor, 2017). Literature evidence is available on the relationship between financial literacy and financial inclusion among women entrepreneurs (Younas and Rafay, 2021; Struckell et al., 2022; Llados-Masllorens and Ruiz-Dotras, 2021). However, a comprehensive study is required to analyse the role of financial literacy as well as digital financial literacy among women entrepreneurs.

1.4 Financial Literacy, Financial Inclusion and Economic Growth

Financial inclusion is the process of accessing financial products by people (Sujlana and Kiran, 2018; Jukan and Softic, 2016; Bire et al., 2019; Grohmann et al., 2018). The concept of financial inclusion can be multifaced depending on whether it is being defined for individual level or company level. For instance, at the individual and/or household levels, financial inclusion impacts health, education, and gender balance. At the national level, it affects income and wealth equality, poverty, economic growth and employment etc. Financial as well as digital literacy are pre-requisite of financial inclusion (Lyons et al., 2021) and financial illiteracy is proven as the main hurdle for achieving financial inclusion across the globe as per United Nations (UN, 2021). Financial inclusion of women and men using financial and digital literacy may help boosting the economic growth and improving access to financial resources (Rastogi and Ragabiruntha, 2017). As access to financial system helps people, especially women for raising their income and improving their livelihoods. It was evident during the COVID-19 pandemic that massive development in the financial technology helped improving economic activity (IMF 2020 and UNEN Policy Brief, 2023). In spite of evidence of the positive relationship between financial literacy and economic development (Bruhn et al., 2013; Gerardi et al., 2010; Lusardi and Mitchell, 2005; Lusardi and Tufano, 2015; and Van Rooij et al., 2011; Rastogi and Ragabiruntha, 2017), a large proportion of the global population (one forth) remains out of the formal financial system being unbanked, particularly women and youngsters (IMF, 2020 and UNDESA, 2021). Where possession of a bank account is the widely used indicator of financial inclusion. People having bank accounts and using formal financial services have a high level of financial literacy (Klapper et al., 2020). These excluded individuals are inclined to depend heavily on untrustworthy informal lenders in order to fulfil their financial requirements, hence deprive themselves of approaching a wide range of formal financial services. Therefore, it is imperative to educate masses at all levels, especially in developing countries where the proportion of banked population (63%) is comparatively very low than that of the developed countries (94%) (IMF, 2020). Financial inclusion is important for the global population, especially the one residing in the developing countries. As it aids people in generating income through small investments and facilitates them paying daily expenditure. Financial inclusion is also crucial for future investment and risk management (Demirguc-Kunt et al., 2018). A number of studies support the relationship of financial inclusion with entrepreneurship and economic development (Lyons and Kass-Hanna, 2021), where financial literacy plays a very important role in enhancing financial inclusion, hence economic growth (Amidjono et al., 2016; Bire et al., 2019; Grohmann and Menkhoff, 2015; Grohmann et al., 2018).

1.5 Gender Gap in Financial Literacy and financial inclusion

There is evidence from the available literature on the issue of gender disparities in financial literacy in different countries (Chen and Volpe, 2002; Hsu, 2011; Fonseca et al., 2012). Men are equipped with better opportunities of developing the financial literacy than women due to their active involvement in making household financial decisions, whereas women are over occupied with household chores (Hsu, 2011; Fonseca et al., 2012). Gender gap gets remarkable in access to financial services in developing countries due to financial illiteracy in women (Chen and Volpe, 2002; Hsu, 2011; Fonseca et al., 2012). A large proportion of the unbanked global are women (IMF, 2020 and UNDESA, 2021). Women are lacking behind men in financial and digital literacy as well as financial inclusion (Klapper

et al., 2020) given the fact that men are more in making financial decisions (Fonseca et al., 2012). Women are not frequently accountable for financial matters until the death of their spouse or divorce (Hsu, 2011; Bucher-Koenen et al., 2012). Chen and Volpe (2002) during their survey on financial literacy found that women were less willing to learn financial topics when compared to the male respondents. Pakistan is the lowest among low-middle income countries in terms of owning an account, where only 21 % individuals have a bank account, this figure is even lower in case of women where only 13% of women possess any bank account. Gender gap in having an account in the country is quite wide (15%). Pakistan is having the second largest population of unbanked adults (115 million) after both China and India. Worldwide, especially in the developing countries, more women than men remain unbanked and Pakistani women are more than half of the unbanked individuals. It is evident that labour force participation and financial inclusion are correlated to each other, for instance, in case of Pakistan, adults who are part of the labour force are roughly twofold than the number of individuals who are having account than those who are not. Digitalizing wage payments may help reducing the proportion of unbanked people up to 20% in case of countries like Pakistan. There is limited evidence available in literature on digital financial literacy among women entrepreneurs for realizing optimistic financial outcomes (Lyons and Hanna, 2021; Setiawan et al., 2022; Rahayu et al., 2022; Suseno and Abbott, 2021; b and Naima, 2021; Barik and Sharma, 2019). A very few studies were found focusing on gender gap in financial literacy, digital financial literacy and financial inclusion in case of Pakistan (e.g., Noor et al., 2022 analysed the role of financial efficacy in financial literacy and financial inclusion in Pakistan), particularly in case of female entrepreneurs. Publications (not necessarily research publications) are issued by various banks of Pakistan periodically. For instance, ZTBL (2023) examined the past and current trends of financial inclusion in Pakistan and confirmed the correlation between the financial exclusion and the poverty prevailing in developing nations, evident in the available literature. According to this study, there have been many challenging hinderances in attaining the financial inclusion in Pakistan. State Bank of Pakistan (SBP) along with all commercial banks keeps launching different products for the improvement of the status of financial inclusion and inclusive economic growth. In case of digital financial literacy and its linkages with financial inclusion, literature is even more limited in the province and the country (for example, ZTBL, 2023; Noor et al., 2022; Raza et al., 2023; and Akhter et al. 2023). Consequently, this study proposes studying the gender gap in financial literacy and digital financial literacy in Pakistan as well as in Punjab province. In case of Punjab (using primary data) special focus would be on gender difference in financial literacy, digital financial literacy and its implications for financial inclusion in females entrepreneurs in particular. This study would help policy makers, educational institutions and other stakeholders to customise financial literacy improvement programs for women entrepreneurs and improve financial inclusion in female entrepreneurs.

1.6 Objectives

This study has the following objectives:

1. To estimate the degree of financial literacy in men and women in Pakistan.

2. To analyse gender gap in financial literacy and digital financial literacy among entrepreneurs in Punjab province of Pakistan.

3. To evaluate the gender gap in financial inclusion among entrepreneurs in Punjab province of Pakistan.

4. To assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab, Pakistan.

5. To recommend practical policy measures on the basis of this research.

1.7 Relevance to Public Policy

Pakistan is at the lowest rank among low-middle-income countries in terms of adults owning an account. And merely 21% of individuals and only 13% of women possess any bank account, and the gender gap is quite wide too (15%). Pakistan is having the second largest population of unbanked adults, where women are more than half of them. In case of Pakistan, limited studies were found on gender gap in digital financial literacy and financial inclusion. Consequently, this study proposes studying the gender gap in financial literacy, digital financial literacy in Pakistan and Punjab. In case of Punjab, studying gender difference in financial literacy, digital financial literacy and its implications for financial inclusion in females in general and entrepreneurs in particular. This study would help policy makers, educational institutions and other stakeholders to customise financial literacy improvement programs for women entrepreneurs and improve financial inclusion in female entrepreneurs. This study would aid in development of targeted policy recommendations for policy makers, educational and financial institutions, and NGOs to promote gender equality in financial inclusion by enhancing digital financial literacy among women entrepreneurs. It would aid stakeholders in designing policy for bridging gender gap in accessing financial resources and opportunities, fostering inclusive economic development through improving bargaining power of female entrepreneurs in Punjab, Pakistan. It would help them in customising financial literacy improvement programs for women entrepreneurs and improve financial inclusion in female entrepreneurs.

RESEARCH METHODOLOGY

The following research design was followed to conduct the study. Study area of the study in hand was Punjab, Pakistan.

2.1 Data Sources

This study has utilized data from both primary and secondary sources.

2.1.1 Secondary Sources of Data

Secondary sources were utilized for two purposes, the first for addressing the first objective (to estimate the degree of financial literacy in men and women in Pakistan). The required information was retrieved from the website of World Bank's Global Findex databases. The second source utilized was Pakistan Social and Living Standards Measurement (PSLM) micro-data 2019–2020. It was utilized for the purpose of sampling required to address objective two to four (to analyze gender gap in financial literacy and digital financial literacy among entrepreneurs in Punjab province of Pakistan; to evaluate the gender gap in financial inclusion among entrepreneurs in Punjab province of Pakistan; to assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab, Pakistan). And the microdata was downloaded from the website of Pakistan Bureau of Statistics (PBS), Government of Pakistan.

The Global Findex served as the world's most extensive and detailed repository of financial inclusion data (Demirgüç-Kunt et al. 2022). This database provides information on adult financial behaviors, including account ownership, saving, borrowing, payment transactions, risk management strategies and reasons for not having an account and etc. Since 2011, this database has been updated every three years. The latest version is 2021 edition providing such information of 128000 adults, 123 countries and different income groups of the world.

PSLM (District Level) Survey and PSLM/ HIES (National/ Provincial level) Survey have been conducted on alternating years since 2004. PSLM District level surveys help the government analyzing poverty dynamics, whereas provincial level surveys (that is HIES) collects data on indicators such as income and consumption helpful for estimation of consumption-based poverty. The history of the HIES dates back to 1963 with regular issues. In 1990 the questionnaire of the survey was revised, and the data was published for years 1990-91, 1992-93, 1993-94 and 1996-97. In 1998-99, the HIES survey was merged with the Pakistan Integrated Household Survey (PIHS) and published in years 1998-99 and 2001-02. Later during 2004, this survey was renamed as Pakistan Social and Living Standards Measurement (PSLM) Survey. The latest round of the PSLM district level survey is the twelfth one published in 2019-20 providing data on a number of 6500 blocks/195000 households. It provides data on variables including education, employment and income etc.

2.1.2 Primary Source of Data

A survey is being conducted where a well-structured questionnaire on financial literacy, digital financial literacy and financial inclusion was structured.

2.2 Sampling

Since the analysis of this study focusses on female entrepreneurs, the sampling procedure followed the multistage sampling techniques involving two steps using the PSLM microdata 2019-20. As a first

step, target district was selected from Punjab and as a second step, number of respondents for data collection were selected.

2.2.1 District Selection

Section E of the PSLM District Level Survey 2019-20 deals with variables on 'Employment and Income of age group 10 years or older'. In a question (E-14) the respondents were asked 'What was the employment Status?' and their responses had been noted as reported in table 1.

Table 1: Question on Employment Status in PSLM and Responses:

Question (E-14)	Responses/Categories								
	1	2-	3	4	5	6	7	8	9
'What was employment Status?'	employer, employing <10 person	employer, employing ≥10 persons	self-employed non-agri	paid employee	contributing family worker	own cultivator	share cropper	contract cultivator	livestock (only)

Source: PSLM 2019-20

On the basis of these answers, entrepreneur includes all categories except categories 4 and 5 (paid employee and contributing family worker) [see for instance, Sultana et al. (2020) and Ahsan et al. (2021)]. However, a few studies exclude categories 5-9 as well on account of including these in the main category of 'farming'. And categorize employment status only non-agricultural self-employed categories (1-2) and category (3) are considered as main categories of 'employers' and 'self-employed', respectively (following PSLM, 2020[1] and definitions adopted by Shair, 2024). Since the study area of this research is Punjab, responses of females from other provinces were filtered out. On the basis of reply of female respondents, districts of the Punjab province were sorted in descending order according to the female entrepreneurs (sum of 'categories 1, 2, 3, as mentioned above). Doing so, Lahore and Faisalabad got the highest ranks with a number of female entrepreneurs equal to 1004231 and 420399, respectively (table 2). However, district Faisalabad was selected randomly out of top 15 districts of Punjab ranked according to the proportion of female entrepreneurs out of total employed females, where Faisalabad resides female entrepreneur constituting 25 percent of total employed females of the district. Faisalabad is the second largest city of Punjab according to population and found at centre of the province. It is considered as the hub of business activities, which is obvious from its famous title 'the Manchester of Pakistan'.

Table 2: Proportion of Female Entrepreneurs in Different Districts of Punjab

A	B	C	D	E	F =C+D+E	G	H=F/G*100	I
Rank (Column H)	District	1=employer, employing <10 person	2=employer, employing ≥10 persons	3=self employed non agri	Female Entrepreneur (1+2+3)	Total employed female in district	% female entrepreneur out of total employed female	*Total females (PSLM)*

[1] Employer: A person, who has employed one or more persons, on continuous basis, during the reference period, is defined as employer. He may have enterprise by himself or with one or more partners. Self-employed: A person who during the reference period performed some work for profit or family gain, in cash or in kind on his/ her own economic enterprise, shop, profession or trade where the remuneration is directly dependent upon the profits, or the potential profits, derived from the goods and services produced. Self-employed persons do not get assistance from anyone i.e. hires no services of paid employees. However, he/she may utilize the services of unpaid family workers (PSLM Pakistan Social & Living Standards Measurement Survey, District Level (2019-20) MANUAL OF INSTRUCTIONS JULY 2019 Pakistan Bureau of Statistics Ministry of PD&R Government of Pakistan).

						(1+2+3+…+9)[2]		
1	Lahore	97526	98652	808053	1004231(rank1)	2892187	34.722	8061189
2	Gujranwala	49620	15059	267855	332534	1040397	31.962	3061461
3	Mianwali	942	108	86186	87236	287661	30.326	922511
4	Multan	6818	1046	188594	196458	651045	30.176	1784959
5	Bahawalpur	0	0	3732	3732	12709	29.365	30284
6	Gujrat	9695	455	121079	131229	453325	28.948	1572900
7	Nankana Sahib	2270	1475	26473	30218	109327	27.640	311225
8	Sheikhupura	6410	5521	84506	96437	363451	26.534	956977
9	Sargodha	2762	0	85306	88068	339404	25.948	1077073
10	Khanewal	4404	2607	152057	159068	621909	25.577	1855940
11	Kasur	6239	12782	164173	183194	739499	24.77	765574
12	Faisalabad	25042	6025	420399	451466 (rank2)	1835170	24.601	1959710
13	Jehlum	1251	0	52131	53382	217071	24.592	4828343
14	Sahiwal	4104	681	61378	66163	272357	24.293	720434
15	Sialkot	976	316	73203	74495	323627	23.0188	661428
16	Narowal	268	0	29336	29604	129919	22.787	1020588
17	MandiBahauddin	7859	408	67551	75818	335101	22.625	475410
18	Bahawalnagar	227	0	4012	4239	19358	21.898	1030807
19	Hafizabad	2332	177	44033	46542	213431	21.806	45415
20	Chakwal	2350	167	62979	65496	300903	21.766	615647
21	Chiniot	3590	3480	63826	70896	328319	21.594	847040
22	Okara	1696	0	70755	72451	341407	21.221	829007
23	Vehari	346	0	63857	64203	306158	20.970	880014
24	Khushab	591	169	47821	48581	236169	20.570	48337121
25	T.T. Singh	1507	0	50245	51752	253161	20.442	773322
26	Jhang	6613	4598	159433	170644	856411	19.925	554274
27	Lodhran	5390	476	68786	74652	382778	19.503	1695974
28	Attock	157	0	1689	1846	9603	19.223	960050
29	Muzaffar Garh	204	374	75376	75954	422995	17.956	27738
30	Pakpattan	1170	364	37991	39525	228990	17.260	1099217
31	D. G. Khan	4451	0	113834	118285	685797	17.248	486734
32	Layyah	2954	591	95551	99096	621198	15.952	1633784
33	Rahim YK	1302	2033	96518	99853	682568	14.629	1258533
34	Rajanpur	0	0	36162	36162	254101	14.231	1409112
36	Bhakhar	382	0	44616	44998	319700	14.075	529227
	Total	285312	159171	4063019	4507502	17983310	25.065	839651

Source: PSLM 2019-20 Microdata

2.2.2 Decision on Sample Size

For selection of respondents, using PSLM 2019-20 micro data, proportion of female entrepreneurs out of total employed females of the district was calculated in the district Faisalabad, which turned out to be 15 percent. On the basis of Pakistan's Population Census (2017), female proportion was calculated for the district and using that proportion female population of the district was found (that is, 49 percent). By multiplying this figure with proportion of employed females out of total female gives the number of total employed female (which was found using PSLM data) for the year 2023. And by multiplying proportion of entrepreneurs out of total employed (PSLM) with total employed female of 2023 gives the number of entrepreneurs for the year 2023 in the district Faisalabad. Using

[2] Code 4= Paid employee, Code 5=Contributing family worker, Code 6= Own cultivator, Code 7=Share-cropper, Code 8=Contract cultivator, Code 9= Live stock (only) (PSLM Pakistan Social & Living Standards Measurement Survey, District Level (2019-20) MANUAL OF INSTRUCTIONS JULY 2019 Pakistan Bureau of Statistics Ministry of PD&R Government of Pakisan)

Yemane's (1967) formula of sampling as given below, we reach at a figure of 100 female respondents to become part of the survey.

No of Respondents = $N/(1+N\,\mathcal{E}^2)$ 2.1

where $\mathcal{E}$ (chance of error) =10%

Table 3: Sampling of Female Respondents in the District Faisalabad

S. No.	Variable	Figure	Source
1	Total females	1959710	PSLM 2019-20
2	Employed females	1835170	
3	Female entrepreneur	451466	
4	% of employed female out of total females	93.645	(row2/row1)*100
5	% female entrepreneurs out of total employed	25	(row3/row2)*100
6	Current population (2023)	9075819	PBS Population Census 2023 https://www.pbs.gov.pk/sites/default/files/population/2023/Punjab.pdf
7	total employed female (2023)	4067594	row 4*row 7
8	Female entrepreneurs (2023)	1000660	N= row 5*row 7
9	Sample size	99.99≈100	No of respondents =$N/(1+Ne^2)$, where, chance of error (e)=1%
10		19.999≈20	No of respondents = $N/(1+Ne^2)$ where e=5%

Source: PSLM 2019-20 Microdata

Table 4: Socio-economic attributes of Female Entrepreneurs in the District Faisalabad

Attribute	Minimum	Average	Maximum
Age	10	39	87
Education	0	9	28

Source: PSLM 2019-20 Microdata

Table 5: Nature of Work Done by Female Entrepreneurs in the District Faisalabad

S. No.	Nature of work done	No.	%	Cumulative (%)
1	Retail sale in non-specialized stores with food	51186	11.6	11.6
2	Retail sale of food in specialized stores	48284	10.9	22.5
3	Manufacture of wearing apparel, except fur apparel	47233	10.7	33.2
4	Retail sale of textiles in specialized stores	26914	6.1	39.3
5	Retail sale of clothing, footwear and leather articles in specialized stores	12178	2.8	42.1
6	Other retail sale not in stores or stalls or markets	12147	2.7	44.8
7	Hairdressing and other beauty treatment	10901	2.5	47.3
8	Restaurants and mobile food service activities	10863	2.5	49.8
9	Urban and suburban passenger land transport	10823	2.4	52.2
10	Freight transport by road	9806	2.2	54.4
11	Retail sale via stalls and markets	9089	2.1	56.5
12	Construction of buildings	9027	2	58.5
13	Real estate activities on a fee or contract basis	8978	2	60.5
14	Maintenance and repair of motor vehicles	8549	1.9	62.4
15	Repair of electrical equipment	7986	1.8	64.2
16	Manufacture of other textiles n.e.c.	7116	1.6	65.8
17	Sale, maintenance& repair of motorcycles & related parts & accessories	5337	1.2	67

18	Retail sale of electrical appliances&furniture &other household articles in spec	5193	1.2	68.2
19	Manufacture of structural metal products	4919	1.1	69.3
20	Manufacture of builders' carpentry and joinery	4179	0.9	70.2
21	Retail sale of second-hand goods	3932	0.9	71.1
22	Wholesale of food, beverages and tobacco	3747	0.8	71.9
23	Sale of motor vehicle parts and accessories	3177	0.7	72.6
24	Other passenger land transport	3122	0.7	73.3
25	Retail sale of computers software&telecommunications equipment in sp.stores	3036	0.7	74
26	Legal activities	2970	0.7	74.7
27	Medical and dental practice activities	2931	0.7	75.4
28	Preparation and spinning of textile fibers	2886	0.7	76.1
29	Manufacture of knitted and crocheted apparel	2845	0.6	76.7
30	Retail sale of pharmaceutical/medical goods, cosmetic&toilet articles	2826	0.6	77.3
31	Retail sale of hardware and paints and glass in specialized stores	2618	0.6	77.9
32	Non-specialized wholesale trade	2567	0.6	78.5
33	Wholesale of agricultural raw materials and live animals	2514	0.6	79.1
34	Manufacture of grain mill products	2414	0.5	79.6
35	Wholesale of textiles, clothing and footwear	2372	0.5	80.1
36	Repair of household appliances and home and garden equipment	2221	0.5	80.6
37	Other retail sale of new goods in specialized stores	2185	0.5	81.1
38	Retail sale via stalls and markets of textiles, clothing & footwear	2133	0.5	81.6
39	Repair of other personal and household goods	2101	0.5	82.1
40	Creative, arts and entertainment activities	2069	0.5	82.6
41	Wholesale of waste and scrap and other products n.e.c.	1986	0.4	83
42	Repair of electronic and optical equipment	1942	0.4	83.4
43	Short term accommodation activities	1898	0.4	83.8
44	Finishing of textiles	1864	0.4	84.2
45	Wholesale of electronic&telecommunications equipment & parts	1861	0.4	84.6
46	Processing and preserving of meat	1851	0.4	85
47	Manufacture of clay building materials	1750	0.4	85.4
48	Manufacture of bakery products	1748	0.4	85.8
49	Water collection, treatment and supply	1638	0.4	86.2
50	Retail sale of automotive fuel in specialized stores	1625	0.4	86.6
51	Pre-primary and primary education	1622	0.4	87
52	Manufacture of footwear	1609	0.4	87.4
53	Wholesale of other household goods	1604	0.4	87.8
54	Manufacture of furniture	1521	0.3	88.1
55	Retail sale via stalls and markets of other goods	1481	0.3	88.4
56	Photocopying, doc; preparation & other sp; office support activities	1406	0.3	88.7
57	Wholesale of construction materials&hardware&plumbing	1370	0.3	89
58	Washing and (dry) cleaning of textile and fur products	1363	0.3	89.3
59	Activities of households as employers of domestic personnel	1362	0.3	89.6
60	Other personal service activities n.e.c	1351	0.3	89.9
Sum of all remaining		43615	100	100
Total		441845	100	100

2.2.3 Selection of respondents

As per Economic Census of Pakistan 2005, there exist a total number of 3.2 million SMEs present in Pakistan (Khalil, 2021). According to SMEDA, this number has increased to more than 5 million (SBP, 2022). However, it is difficult to find a mechanism of finding details of these SMEs for the purpose of respondent selection. A comprehensive sampling framework for choosing respondents (both male or female) entrepreneurs in Pakistan is not readily available. Sample size as decided in the previous section was worked out to be between 20 to 100 in case of female respondents. For finding gender gap, equal number of male respondents were also required. Thus, for selection of respondents, random sampling could only be followed for the lists of SMEs (sampling framework) received from Faisalabad Chamber of Commerce and Industries and Faisalabad Women Chamber of Commerce and Industries. To get these lists we conducted meetings with their officials and registered entrepreneurs. The lists provided by them included both members of the chambers as well as trainees (non-members). List of female entrepreneurs provided was of 247 women entrepreneurs. Our team tried

hard to contact them telephonically and through email, but contacts developed so by were very few. Our project team visited 35 women entrepreneurs then. Where 50 percent of them denied responding. Resultantly, a number of 15 entrepreneurs were contacted for pre-testing of the questionnaire. Their feedback however largely helped in refining the initial draft of the questionnaire. Literature supports using convenience sampling and snowball sampling for this purpose (Ackah and Vuvor (2011), Adeyemi (2012), Bhardwaj et al. (2012), Bondinuba (2012), Mubeen et al. (2019), Zubair et al. (2021), Shahid et al. (2022)). Most of the researchers have utilized the snowball sampling (Sharma et al. (2007), Osman et al., (2010), Khan et al. (2012), Chander and Arora (2013), Kaushik (2013), Zafar and Khan (2013), Jafary and Aslam (2019), Kemal (2023)). In addition, given the difficulty faced by our team in finding the exact sampling framework, it was decided to reach respondents using the snowballing technique. Where respondents who were interviewed first helped in providing the names and addresses of other entrepreneurs who later on became part of the survey. Additionally, the survey team visited different exhibitions and different localities of the district in order to reach a maximum number of male and female entrepreneurs.

2.3 Questionnaire Development

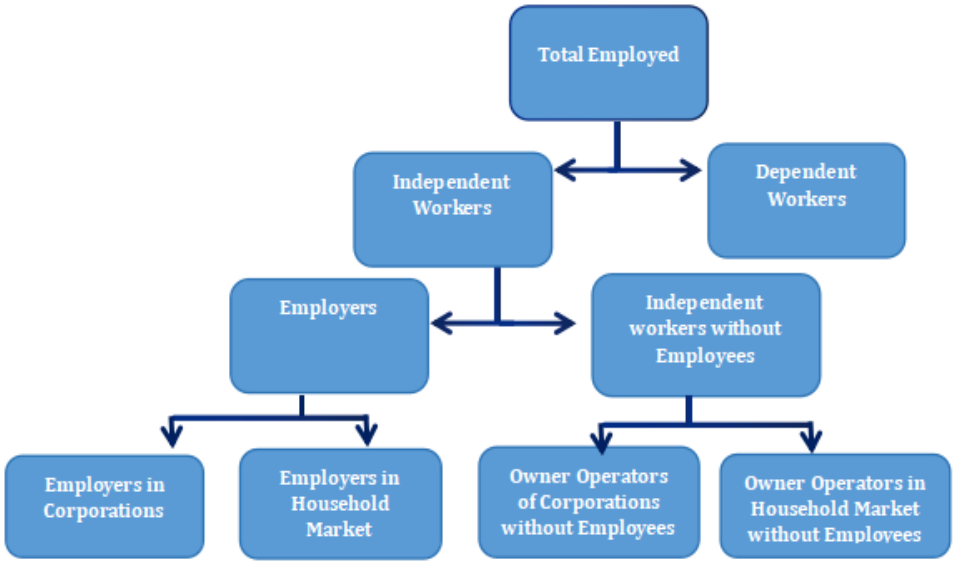
For development of the questionnaire, it was important to define the entrepreneur and enterprises first.

What is meant by Entrepreneurs and Enterprise?

An entrepreneur is defined as "a person who creates, organizes, and manages a business or enterprise with the aim of earning a profit, often taking on financial risk in the process" (ILO, 2018).

Self-employment is another term used to define entrepreneurship which includes all individuals who are employers, own-account workers, members of producers' cooperatives and contributing family workers (ILO, 2016). Entrepreneurs initiate, manage, and finance businesses, making crucial decisions.

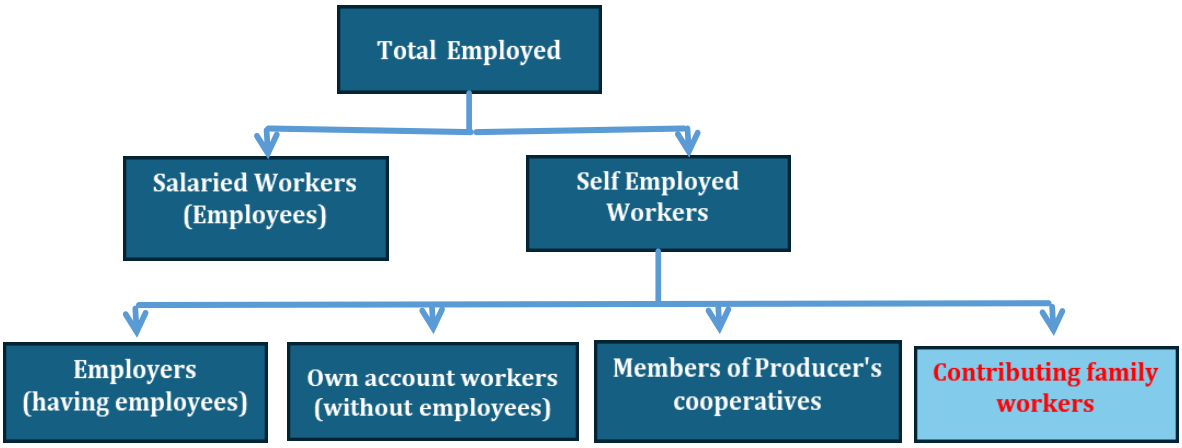
Figure 1: International Classifications of Status in Employment (ILOSTAT/ICSE-18-A)



International Classifications of Status in Employment-18 (ICSE-18) classifies on the basis of two criteria, that is, type of authority (ICSE-18-A) and type of economic risk (ICSE-18-R) the worker is exposed to. The International Classification of Status at Work (ICSaW-18) expands on ICSE-18 by including not only jobs, but all work activities not considered to be in employment with 20 mutually exclusive categories (ILO, 2023).

ICSE-18-A (figure 1) which categorizes status of employment into 10 categories where as previously ICSE-93 used to categorize it into 6 categories (figure 2).

Figure 2: ICSE-93 Classification of Employment



Source: *ILO (2018, 2022, 2023, 2024).*

It contains 5 categories that can be organized into one single hierarchy as follows, plus an additional category for workers not classifiable by status. ICSE-93 differentiates between the status in employment (total employed) between two categories, namely, salaried workers/employees and self-employed workers. The second category is further differentiated into three categories, like, self-employed workers/employers having employees; self-employed workers without employees called own-account workers; and members of producers' cooperatives and contributing family workers (also known as unpaid family workers). Contributing family workers do not fall under the definition of women entrepreneurs, they are not considered entrepreneurs or self-employed, but rather unpaid family helpers (ILO, 2022). And family workers assist family members without financial autonomy or decision-making power (Weidenkaff and Witte, 2016). ICSE distinguishes contributing family workers from entrepreneurs, those declaring themselves as a contributing family worker are not required to be added in the statistics, without exploring their status with further relevant questions. ICSE-93 presents the former statistical standard, but it is still the most widely used by national statistical systems in the production of labour statistics. SECTION E of the PSLM District Level Survey 2019-20 deals with variables on 'Employment and Income of age group 10 years or older'. In a question (E-14) the respondents were asked 'What was the employment Status? And responses include '1=employer, employing less than 10-person, 2=employer, employing 10 or more persons, 3=self-employed non agri, 4= paid employee, 5=contributing family worker, 6=own cultivator, 7=sharecropper, 8=contract cultivator and 9=livestock (only).

According to Economic Census of Pakistan 2005, there are a total 3.2 million SMEs present in Pakistan (Khalil, 2021), which constitute nearly 90 percent of entirely private businesses and employ almost 78 percent of the non-agricultural labor force (Manzoor et al., 2021). According to SMEDA, the number has increased to more than 5 million. This sector contributes round 40% in GDP of Pakistan and 25% in overall exports (SBP, 2022). However, SMEs face more severe financing constraints than large firms, especially in lower income environments, as per World Bank Enterprise Surveys (2024). Small and medium-sized enterprises are constrained in lower-income settings as compared to large enterprises. In case of Pakistan, 49.2 percent of small size (with 5-19 employees) and 33.8 percent of medium size (with 20-99 employees) firms reported to be credit constrained, more than that of large size (with 100+ employees) firms where 25.6 percent of large size firms reported to be credit constraint. Ironically firms using banks to finance investment are very low particularly in case of small size and medium size firms with percentage of zero and 0.9 respectively. In case of large size, 30.2 percent firms are using banks for financing investment. Literature suggests lack of financial education to be a relevant constraint in this scenario where small business owners suffer the most due to potential difficulty of managing firms' finances efficiently (WB, 2010, Bruhn and Zia, 2013). Support of a functional financial system where savings, credit and risk management products are available to enterprises, serves a vital purpose. Where financial inclusion of less advantages groups facilitates them starting and running entrepreneurship (ZTBL). In Pakistan, such products of banks like bank credit is being received predominantly by larger enterprises accounting for 65% of all bank loans (ZTBL,). Hence, micro, small and medium enterprises face larger constraints in accessing formal sources of finance (Berger & Udell (1998), Obwona and Mugume (2001), Beck, Demirguc-Kunt, & Levine (2003), Cabral & Mata, (2003), Kasekende and Opondo (2003), Cassar (2004), Galindo & Micco (2005), Beck & Demirguc-Kunt (2006), Galindo & Micco (2007), Hallward-Driemeier & Aterido (2007), Huyghebaert & Van de Gucht (2007), Ishengoma & Kappel (2008), Aterido et al., (2009), Olawale & Garwe (2010), Turyahikayo (2015) Lakuma, Marty, & Kuteesa (2016), and Lakuma et al., 2019). On the basis of these facts and figures, it was decided to include micro, small and medium enterprises in this study.

The SME definitions applied in different countries are based upon various criteria such as number of employees, value of assets, sales, volume of output and turnover (Cunningham & Rowley, 2008). These definitions vary from country to country and also within countries (Dar et al. 2017). In Pakistan there are different definitions of SMEs with different criteria (Mustafa & Khan,2005; Rana, Khan& Asad, 2007) according to different sources like The SME Bank, SMEDA, SME Policy 2021, Pakistan Bureau of Statistics (PBS), State Bank of Pakistan (SBP), Companies Ordinance 2015, and Securities and Exchange Commission of Pakistan (SECP).

Table 6: Micro, Small and Medium Enterprises in Pakistan

Source	Criterion	ME	SE	ME	Startup
SME Policy 2021	Annual Turnover	-	Upto PKR 150 m	PKR 150m-PKR 800	Age upto 5 years (SE & ME)
State Bank of Pakistan	Annual Turnover, Number of employees, Type of business	-	Same as above Upto 50	Same as above 51-100 (trading) 51-250 (manufacturing&services)	-

SMEDA (older version)	No. of employees Productive assets	1 to 9 Upto PKR 2m	10-35 PKR 2-20 m	39-99 PKR 20-40 m	-
SME Bank	Total Assets		<PKR100m	Over PKR 100 m	-
ADB 2023, Pakistan Labour Force Survey 2020-21 PSLM 2019-20		Own account workers and employers			-
Kureshi et al., 2009 National SME Policy 2007	Annual Capital Annual Sales No of Employees		Rs. 25 million Rs. 250 million 250		-
Wadood&Shamsuddin, ILO, 2024	No of Employees	5-9	10-49	50-99	
Dar et al., 2017	No of Employees Productive Assets Total Assets		Between 5-24 PKR0.5-10 m <50 m	Between 25-99 PKR 10-40 m Over PKR 50m	

According to the government of Pakistan entrepreneurs in the PSLM survey entrepreneur are those who 'own and operate a business with 1-9 employees (small-scale entrepreneurs); 'own and operate a business with 10 or more employees (large-scale entrepreneurs)'; and work for themselves, without hiring any employees (self-employed) (GOP 2020).

Pakistan Labour Force Survey provides gender disaggregated data on: Own account workers (i.e. Self-Employed workers) who are owner-operators without employees who operate an enterprise for profit alone or with one or more partners or contributing family workers; they do not employ any person to work in the enterprise on a regular basis as an employee. Employers who own the economic unit in which they work and control its activities on their own or in partnership with others (including temporarily but excluding their partners and family helpers) — and in this capacity, employ one or more persons to work as an employee on a regular basis (ADB, 2023).

According to SME Policy 2021 of Pakistan Enterprise can be differentiated into three categories based on annual sales turnover and age of the enterprise. Where, Small Enterprise makes turnover upto PKR 150 million; medium enterprise earns turn over above PKR 150 million to PKR 800 million. Startup represents a start-up small or start up medium enterprise with age upto 5 years.

State Bank of Pakistan in addition to annual turnover, considers number of employees as another criteria of differentiating between small enterprise and medium enterprise, where upto 50 number of employees is considered as small enterprise and between 51 to 250 in case of manufacturing and services and 51 to 100 in case of trading are considered as medium enterprise. There is a clarification presented by SBP in this regard that an enterprise is required to meet both criteria, nonetheless, if an SE meets one criterion and falls in the range of ME in the second criterion would be considered as ME. And if a ME meets one criterion of ME and falls in the range above the ME in the second criterion, it will be classified as a commercial entity. Number of employees may include contract employees, if an enterprise is a public entity would not be considered as enterprise (in case of ME).

2.3.1 Linking literature with Questions in the Questionnaire

Refer to the questionnaire attached at the end of this report as Appendix-1, the following tables (table 7 to table 9) present a comprehensive review of literature on the core variables of this study namely financial inclusion, financial literacy and digital financial literacy respectively. The last column in

these three tables is having codes of questions included in the questionnaire (for details see the questionnaire).

Table 7: List of Variables on Financial Inclusion

Category Variable		Description	Source	Questions[3]
Access to Financial Services	Account Holding	having account at a formal financial inst. (%, age 15+)	World Bank (2020), Demirgüç-Kunt et al., (2022)	FIN3
		dummy variable, 1 if more than 50% of the account holders are female, 0 otherwise	Hasan et al. (2023), Demirgüç-Kunt et al. (2022)	FIN9
		having own bank account or utilizing someone else bank account	Kamble et al. (2024)	FI2A
		account ownership	Babajie et al. (2018)	DFL-1
		account ownership: proportion of population that has an account at a formal financial institution (bank, formal financial institution, mobile money accounts)	Antonia et al. (2018)	FIN4A FIN4-1
		holds payment product (prepaid cards, current accounts etc.) (binary variable)	OECD/INFE, (2022)	FIN4-1
		have debit card	Kamble et al. (2024)	FIN5
		holds credit product, identifies credit products across country level data, such as mortgages, credit cards, microloans etc. , binary variable: takes value of 1 if any credit product is held, otherwise 0	OECD/INFE (2022)	FIN7
		have credit card	Kamble et al. 2024	FIN7
		credit card ownership: binary variable denoting whether a woman entrepreneur owns a credit card, with a value of 1 if more than 50% of women account holders own a credit card and 0 otherwise	Hasan et al. (2023), Demirgüç-Kunt et al. (2022)	FIN7
		recent financial product choice identifies individuals that have made at least one product choice (binary variable)	OECD/INFE (2022)	FIN4-1 FIN15
	Access to Financial Service Providers (Supply Side)	easily accessible road to the nearest bank the nearest bank is < 5km from my home takes < 20 min to reach the nearest bank Fare to reach the bank is appropriate for me takes < 25 minutes to easily reach to ATM	Noor et al., (2022)	FIN12A FIN12B FIN12C
		there is a usable access road leading to the nearest formal financial institution the nearest bank is < 5 km from my home I live within 1km of an ATM that I can easily visit to access my account there is a usable access road leading to the nearest formal financial institution	Mindra et al., (2017)	FIN12D FIN12E
		financial services= 1 if respondent has access to savings/money/transfers/insurance/ investment/loans through banks	Kamble et al, (2024)	
Usage of Financial Services	Account Usage	used a debit card paid credit card balances in full made any deposit into the account withdrew from the account used account to store money	Didenko et al. 2023, Demirgüç-Kunt et al. (2022)	FIN5A FIN6
		used account to withdraw money used account to receive/send remittances	Noor et al., (2022)	FIN21
		used account during past 12 months	Babajie et al. (2018)	FIN21
		used debit card during last 12 month	Babajie et al. (2018)	FIN5A

[3] For details of these questions, see Appendix-I (Questionnaire)

		used debit card in the last year	Antonia et al. (2018)	
		used credit card during last 12 month	Babajie et al. (2018)	FIN7A
	Savings	saved at formal financial institution (usage proxy)	Antonia et al. (2018)	FIN14A
		saved in the past year	Didenko et al. 2023, Demirgüç-Kunt et al. (2022)	FIN13
		used account to save for future expenses	Noor et al., (2022)	FIN14
		savings: = 1 if respondent reported having a savings at least with one of the followings: bank, microfinance institutions, post office, mobile money, savings and loan groups or other formal financial institutions	Kamble et al. (2023)	FIN14A1
		I have used savings account to save for future expenses	Mindra et al., (2017)	FIN14A
	Borrowings	binary variable indicating whether a woman entrepreneur has accessed credit from a formal financial institution in the past year, with a value of 1 if > 50% of women account holders have borrowed and 0 otherwise	Hasan et al. (2023), Demirgüç-Kunt et al. (2022)	
		borrowed in the past year	Didenko et al. (2023), Demirgüç-Kunt et al. (2022)	FIN15
		having a loan through at least with one of the followings: bank, microfinance institutions, post office, mobile money, savings and loan groups or other formal financial institutions	Kamble et al. (2023)	FIN16A
		main source of emergency funds in 30 days difficulty of emergency funds in 30 days	Didenko et al. (2023), Demirgüç-Kunt et al. (2022)	FIN17
		relying on family and friends identifies people who turn to family or friends to save money for them, or to help them to make ends meet (binary variable)	OECD/INFE (2022)	FIN16 FIN16B
	Insurances	1 if respondent reported having atleast one of these insurances: medical, life, vehicle, agriculture, house, unemployment, retirement, livestock, family or others	Kamble et al. (2023)	FIN18A FIN18A1 FIN18A2
		holds insurance product, identifies insurance products across country level data, like car insurance, home insurance (binary variable)	OECD/INFE (2022)	FIN18A3 FIN18A4
Awareness of Formal Products	Awareness of Formal Products	aware of formal products and services	Noor et al., (2022)	FIN 10, FIN 11
		I am aware of the formal products and services (savings, loans, insurance and payments/remittances) usage proxy	Mindra et al., (2017)	FIN 10, FIN 11
		aware of at least 5 products (binary variable)	OECD/INFE (2022)	FIN 10, FIN 11
Quality of financial Services	Quality	received information regarding my transactions satisfied with financial products of the bank	Noor et al., (2022)	
		I know which documents are required to open a bank account I receive prompt information regarding my transactions	Mindra et al., (2017)	

Table 8: List of Variables on Financial Literacy

Category	Variable	Description	Source	Questions
Financial Literacy		Financial literacy shows respondents' ability to understand basic financial calculations, inflation, and risks of financial securities. Financial literacy scores are calculated by the number of correct answers from three financial literacy questions.	Khan et al., 2021	FI1 FL2
		Financial literacy is a continuous variable ranging from 0 to 1.	Khan et al., 2021	FL6 FL12
		Financial literacy is a continuous variable, it was being treated as a "Dummy Variable"	Lusardi and Mitchelli,	FL1 to FL16

	Basic Knowledge: Simple and Compound interest rate Inflation Bonds, Securities stocks: Risk and returns Credit Card Ownership Basic questions to inquire about the knowledge of respondent		2007, Huston, 2010	
		Financial literacy is confluence of financial, credit and debt management and the knowledge that is necessary to make financially responsible decisions – decisions that are integral to our everyday lives". It includes understanding how a checking account works, what using a credit card means, and how to avoid debt.	Zucchi, 2018	FL 1-16
		Possessing the skills and knowledge on financial matters to confidently take effective action that best fulfils an individual's personal, family and global community goals	NFEC, 2018	FL15
		Understanding of simple and compound interest rates. Simple interest is calculated by multiplying the loan principal by the interest rate and then by the term of a loan. Compound interest multiplies savings or debt at an accelerated rate. Compound interest is interest calculated on both the initial principal and all of the previously accumulated interest.	Suhail et al., 2020 Klapper et al., 2015	FL13
		Effects of inflation /understanding of inflation and financial diversification. Its gradual rise in prices over time that results in a decrease in purchasing power. A diversified portfolio of equities and bonds can help mitigate inflation risk. Companies' revenues and earnings typically outpace inflation over time	Suhail et al., 2020 OECD/INFE, 2015	FL13
		Difference between bonds, securities and stocks: In stocks, the money you invest buys you a portion of ownership in the company. In bonds, the money you use to purchase the security is essentially a loan that you offer the bond issuer	Suhail et al., 2020	FL3 FL12
		How to evaluate risk and return: to estimate the return of the investment, which is the amount of money you expect to earn from it over time. Risk is the uncertainty or variability of the return. It is measured by standard deviation, beta, and scenario analysis.	Suhail et al., 2020	FL12
		Have Credit Card and know how to use it	Kamble et al. 2024, Hasan et al. 2023, Demirgüç-Kunt et al., 2022	FIN7 FIN7A

		Suppose you had ¥10,000 in a savings account, the interest rate is 2 percent per year, and you never withdraw money or interest payments. After 5 years, how much would you have in this account? Assume that the interest rate on your savings account is 1 percent per year and inflation is 2 percent per year. After 1 year, how much would you be able to buy with the money in this account? Please indicate whether the following statement is true or false: "Buying a company stock usually provides a safer return than does a stock mutual fund". **Based on these three questions, they developed a financial literacy index. Then measured each correct answer by assigning one point for it and did not deduct any points for wrong answers	Klapper and Lusardi 2020; OECD 2020 Khan et al., 2021	FL6
Awareness of Formal Products	Awareness of Formal Products	Aware of formal products and services (Know about savings, Know about loans, Know about remittances, Knowledge about current account, Knowledge about savings/PLS account, Knowledge about ATM, Know in what way to open an account, Know in what way to draw or deposit cash in an account	Noor et al., 2022	FIN4-1 DFL-1
		I am aware of the formal products and services (savings, loans, insurance and payments/remittances) usage proxy	Mindra et al., 2016	DFL-1
		Aware of at least 5 products, Count all positive responses across this question, Binary variable: takes value of 1 if at least five positive responses, otherwise 0	OECD, 2022	DFL-1

2.3.2 Final Questionnaire

On the basis of literature review discussed in the previous section, different questions were asked in order to find the required variables for addressing the objectives of this study. The questionnaire finalised and appended as Appendix-1 had four different parts, as discussed below

Section I: Questions related to socio-economic indicators and attributes related to business experience of entrepreneurs

Section II: Question related to financial inclusion were included on variables after a rigorous literature of review summarised in table 6.

Section III: This section includes questions related to financial literacy of the respondents. These questions were included in the questionnaire on the basis of literature reviewed (look at table 7). Questions were related to financial literacy, like basic knowledge on financial literacy of the respondents, their ability to manage budget, savings and investments, risk management and their perception regarding interest rates, financial education and training, time value of money, financial

education and training, basic banking services, insurance, budget, tax, inflation, savings, numerical skills, etc.

Section IV: This section includes questions related to digital financial literacy of the respondents. Questions were designed on the basis of extensive literature review (see table 8). These questions inquired about respondents' perception on banking services available on mobile, E-money accounts, digital payments, online payments, mobile money transactions, ATM use etc. These queries might be categorised into digital knowledge (like online shopping and mobile banking etc.), perception related to finances (like budgeting, saving, and time value of money), awareness of digital financial services, knowledge of digital finance risk management, awareness of customer rights, attributes of products, and etc.

2.4 Analytical Framework

Data were collected using the questionnaire given as Appendix-1 and the following analytical framework was adopted for addressing the study objectives.

Gender gap in financial literacy, digital financial literacy and financial was found using different statistics (e.g., descriptives, chi-square, independent sample t-test) and graphs. For addressing the main objective of this study (to assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab, Pakistan), logistic regression will be applied. On the basis of findings, the last objective will be addressed (to recommend practical policy measures on the basis of this research). Tentative methodologies are summarised in the following table:

Table 9: Methodology against each Objective

S.No.	Objective	Data	Method
1	To estimate the degree of financial literacy in men and women in Pakistan.	Secondary data:World Bank's Global Findex database	Descriptive Statistics and Graphs
2	To analyse gender gap in digital financial literacy among entrepreneurs in Punjab province of Pakistan.	Primary data: Survey of entrepreneurs in Punjab using a structure questionnaire (Appendix-1)	Descriptive statistics (means, frequencies, and percentages), , Cronbach's Alpha
3	To evaluate the gender gap in financial inclusion among entrepreneurs in Punjab province of Pakistan.		Cross-tabs with statistics like Pearson Chi-Square, Likelihood Ratio Linear-by-Linear Association, Phi, Cramer's V, Contingency Coefficient and Means comparison using independent sample t-test
4	To assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab, Pakistan.		Logistic Regression
5	To recommend practical policy measures on the basis of this research.		Conclusion of all findings

2.4.1 Formation of Index of Financial Inclusion, Financial Literacy and Digital Financial literacy

For addressing the study objective 2-4 as mentioned above in table 10, it was needed to construct three indexes namely Financial Inclusion Index, Financial Literacy Index and Digital Financial Literacy Index.

2.4.1.1 Financial Inclusion Index (FII) formation

Assigning weights to the constructs of Financial Inclusion Index on the basis of already available literature is complex due to contradiction in the approaches being followed by different researcher. Some of them assign equal weight to the variable involve (Sarma (2008) and Chakravaty&Pal (2010), Zhang&Posso (2019), Eze&Alugbuo (2021) and Obiora and Ozili (2024)). This study however assigned weights according to the importance of each construct (following the approach of Demirgüç et al., 2021, where 'usage of formal products' has been given more weightage than 'access to bank products/account holding' and even lesser weightage to 'holding debit card'' borrowing and saving' etc.). Table 7 presents a detailed account of literature recommending these constructs to become part of the FII.

For computation of the financial inclusion index Steps:

$FII_i = w_1 * X_1 + w_2 * X_2 + w_3 * X_3 + \ldots\ldots\ldots\ldots\ldots + w_n * X_n$

Where FII_i is the financial inclusion index for n respondents and W_n represents the weights and X_n represents the constructs developed following the step given in table 10, where details of all variables included as well as the SPSS syntax is given in Appendix-2.

Table 10: Financial Inclusion Index (Dimensions and their Weightage)

S.No.	Dimension/Sub-Dimension (X_i)	Weightage(w_i)
1	Access to Financial ServicesColumn3	0.2
1.1	Account Holding	
1.2	Access to Financial Service Providers (Supply Side)	
2	Usage of Financial Services	0.75
2.1	Account Usage	
2.2	Savings	
2.3	Borrowings	
2.4	Financial Resilience:	
2.4.1	Risk management	
2.4.2	Insurance	
3	Awareness of Formal Products	0.05
3.1	Capability of opening an account at a bank or another type of formal financial institution without the help of another person	
3.2	Capability of opening a mobile money account without the help of another person?	

Based on the calculation discussed above the values of Financial Inclusion Index (FII) range between 0 to 1, where 0 means no financial inclusion and 1 applies full financial inclusion. Financial Inclusion dummy variable (FII_DUMMY) was also formed where FII's value equal to or less than 0.5 was assigned '0' and values ranging between 0.51 and 1 were assigned '1'. Hence FII_DUMMY's values 0/1 means not included/included.

2.4.1.2 Financial Literacy Index formation

Financial Literacy Index (FLI) is based on three dimensions on the basis of insights provided in table 8. These dimensions are named 'Basic Financial Knowledge and Understanding, Financial Attitude, and Financial Behaviour'. Table 8 provides a basis for the construction of this multidimensional index. Literature however gives equal weight to all questions asked for assessing financial literacy of the respondents. This study however give a little more weight to assessment question than to simple queries (see for instance, Huston, 2010; Lusardi & Mitchell, 2014). '1.5' is the score for choosing the correct answer and the respondent gets 1' if answer a straightforward and simple query; and 0 otherwise in both cases. Some studies are evident on giving different weights to different questions (like Klapper & Lusardi, 2016). FLI's values thus range between 0 and 21, and this range is consistent with OECD's approach (also see Atkinson, A., and Messy, F., 2012). Another variable 'FLI_SCORE' a percentage-based variable was constructed to assess financial literacy of the respondents (following Lusardi & Mitchell, 2014). Such standardization helps for easy comparison gender-wise as well as easy interpretation of results (see for instance, Klapper & Lusardi, 2016). Still another variable FII categorized (FII_CAT) was constructed with three categories low, moderate and high financial literacy, where low financial literacy meant FLI_SCORE's values from '0' to '33.33'; moderate financial literacy depict FLI_SCORE's value to be between 33.34 and 66.66=2; high financial literacy category had values 66.67 and above. Such categorization is evident from other studies too (e.g. Lusardi & Mitchell, 2014).

Table 11: Financial Literacy Index (Dimensions and Score)

S.No.	Dimension/Sub-Dimension (Y_j)	No of Question	Maximum Score
1	Basic Financial Knowledge and Understanding		
1.1	Banking Basics and Financial Products	5	5
1.2	Time Value of Money and Interest Rates	2	1+1.5=2.5
1.3	Savings and Liquidity	2	1+1.5=2.5
1.4	Loans and Credit	2	1.5+1.5=3
1.5	Risk and Return	1	1.5
1.6	Inflation Awareness	1	1.5
1.7	Remittances Knowledge	1	1
2	Financial Attitude		
2.1	Attitude towards money and spending	3	3
3	Financial Behaviour		
3.1	Behavioural Aspects of Financial Management	1	1
Maximum Score (FII)			21
% Score (FII_Score) (Max)			100
FII Categorized (FLI_CAT)			Low, Medium, High

2.4.1.3 Digital Financial Literacy Index Computation

Digital Financial Literacy (DFL) is a multidimensional index constructed on the basis of insights developed in table 9 by reviewing literature thoroughly and carefully. This index has four dimensions, namely, 'Basic Knowledge and Understanding/Skills related to Digital Products and Modile Money', 'Digital Financial Services', 'Digital Financial Proficiency', and 'Awareness' (follows the definition set by OECD, 2018). Basic Knowledge and Skills is the most important element hence giving more weightage in the index, as ample understanding of digital payment products (DFL1-1 variable in our case) is crucial for developing digital financial literacy (Prasad & Meghwal, 2017). DFL_SCORE, a percentage-based variable, was constructed to assess digital financial literacy of the respondents in an accurate manner. This variable helps in categorizing DFL as 'DFL_CAT' variable having value labels Low, Moderate, and High levels (by following Lusardi & Mitchell, 2014).

Table 12: Digital Financial Literacy Index

S.No.	Dimension/Sub-Dimension (Z_j)	No of Question	Score
1	Basic Knowledge and Skills related to Mobile Money and Other Digital Products	5	9
1.1	Digital Financial Knowledge (DFK)	1	1*1
1.2	Understanding of Product Digital Asset Management	1	2*1
1.3	Understanding of Digital Alternatives	1	2*1
1.4	Knowledge of Customer Rights and Protection	2	2*2
2	Usage of Digital Financial Services		4
2.1	Knowledge of Digital Financial Services	2	2*1
2.2	Understanding of Digital Financial Services	1	1*1
2.3	Mobile Phone Ownership	1	1*1
3	Digital Financial Proficiency		12
3.1	Mobile Money Proficiency	6	6*2
4	Awareness		5
4.1	Awareness of Mobile Money	1	1*1
4.2	Understanding Financial Risks	1	1*1
4.3	Financial Information and Advice	1	1*1
4.4	Awareness of Cyber Risks and Protections	2	2*1
Maximum Score (DFL)			30
% Score (DFL_Score) (Max)			100
DFL Categorized (DFL_CAT)			Low, Medium, High

2.4.1.4 Analyzing the Effect of DFL on Financial Inclusion

For addressing the fourth objective (to assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab, Pakistan)

$$FII = \beta_0 + \beta_1 DFL + \beta_2 X_i + \varepsilon_i \quad 1$$

Where FI stands for Financial Inclusion Index of entrepreneurs, the proxies of this variable might include account holdings, savings, borrowings and credit card ownership (dummy variables)

DFL stands for Digital Financial Literacy and it is represented by the ability to make and receive digital payments, X_i variables include gender and others.

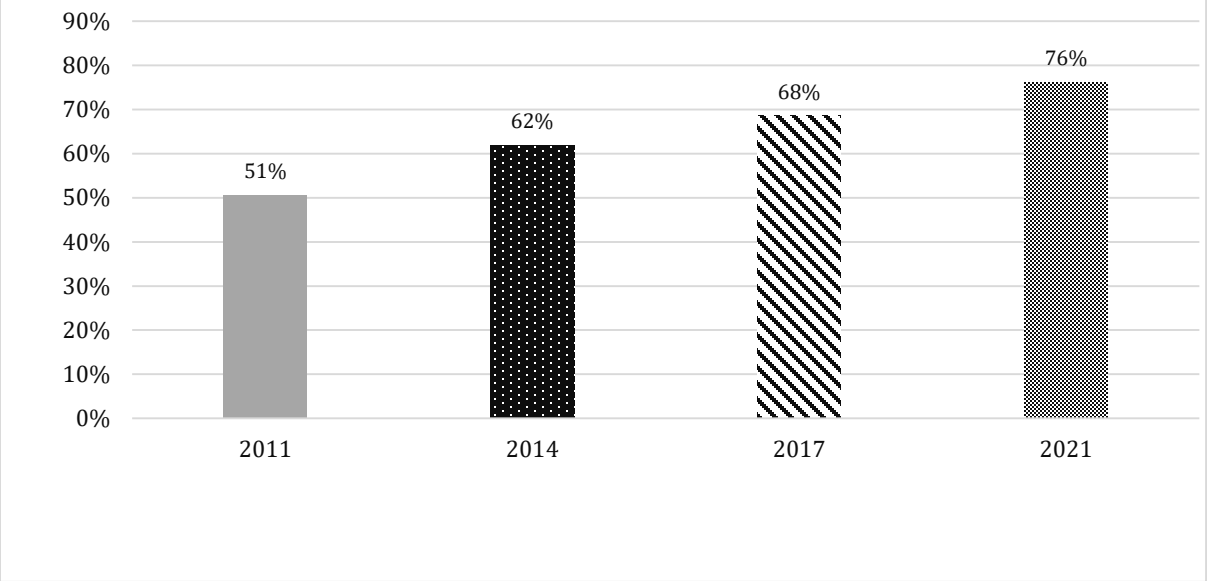
FINDINGS AND DISCUSSION

3.1 Overview of Financial Literacy and Financial Inclusion in the World

This section provides analysis based on the data extracted from the World Bank's Global Findex Database related to financial literacy and financial inclusion. It represents the situation of account ownership in world, different income groups of the world and Pakistan. Where gender gap in account ownership is focused on. Additionally, information related to unbanked adults at world level, income group levels of the world and Pakistan is also presented and discussed where reasons of having no account are also presented. One reason of not having an account at a bank or financial institution was need of having someone's help is a true depiction of being financial literate or not.

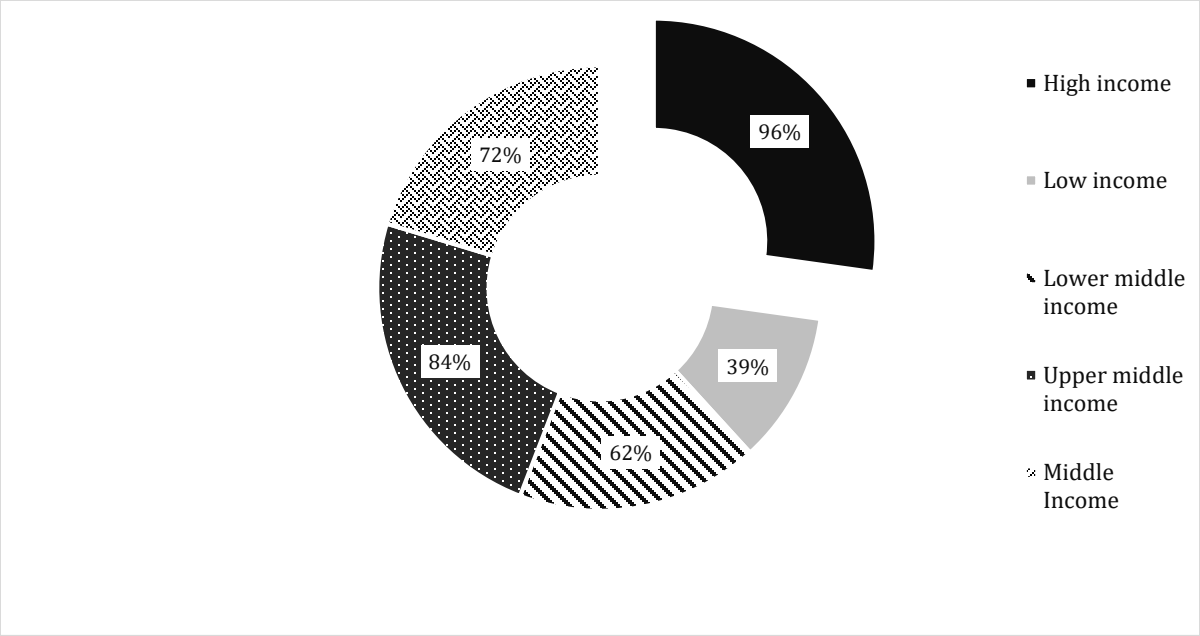
Global Findex Database defines account ownership as the percentage of respondents who have an account at a bank or any financial institution or use a mobile money service. Account ownership depicts a person's engagement with financial service providers, hence his/her state of financial inclusion. Worldwide more than three forth of adults with age more than 15 years own an account and it has increased from 50 percent during the last decade (figure 3).

Figure 3: Global Proportion of Adult Population having an Account



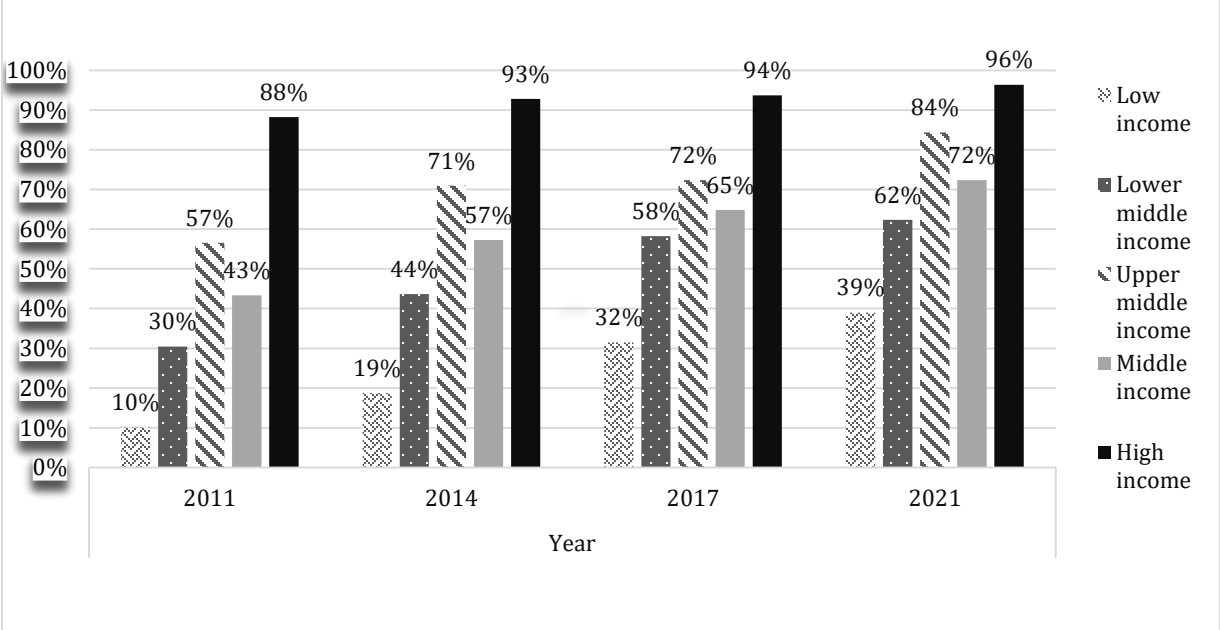
Among different income groups of the world, low middle income group of countries is having the lowest proportion of adults having an account (39%). This figure is 62%, 72% and 84% in case of lower middle income, upper middle income, respectively. In case of high-income countries, 96 percent of adults (more than 15 years age) own account, thus only 4 percent of adults are unbanked in these countries (figure 4).

Figure 4: Account Ownership of Adults in Different Economies of the World



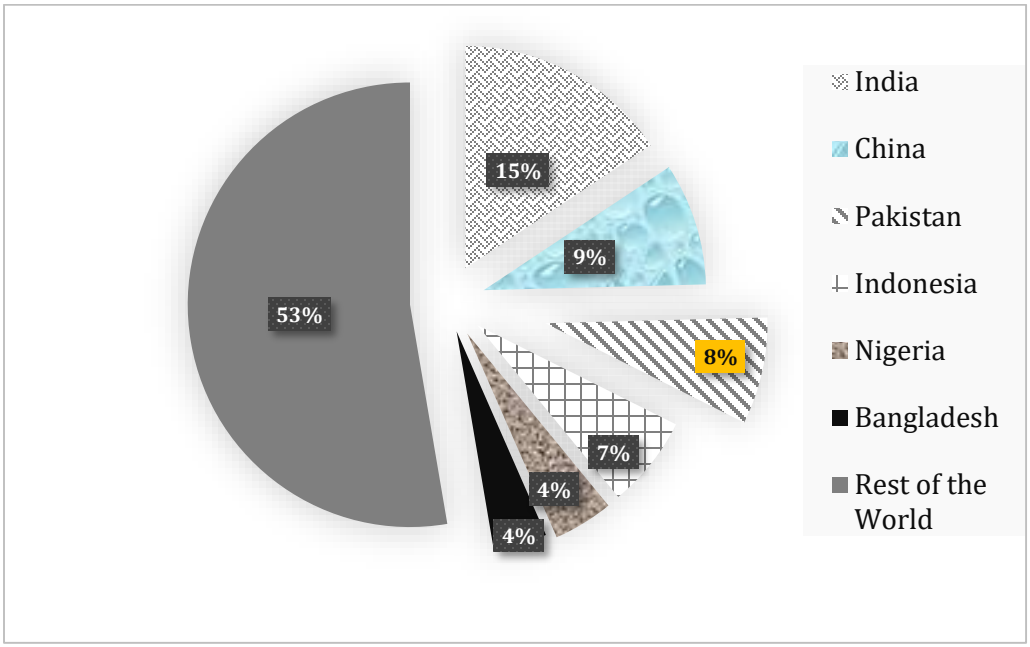
Globally account ownership proportion of adults increased by almost 50 percentage points from 51 percent of adults to 76 percent of adults. Though account ownership increased in high-income, middle income, upper middle income and low middle income by 4, 25, 19 and 41 percentage points, respectively. However, the average rate of growth in low-income economies was steeper, as it increased from 10 percent to 39 percent (almost four times) in a decade (figure 5).

Figure 5: Adults' Account Ownership in Different Economies



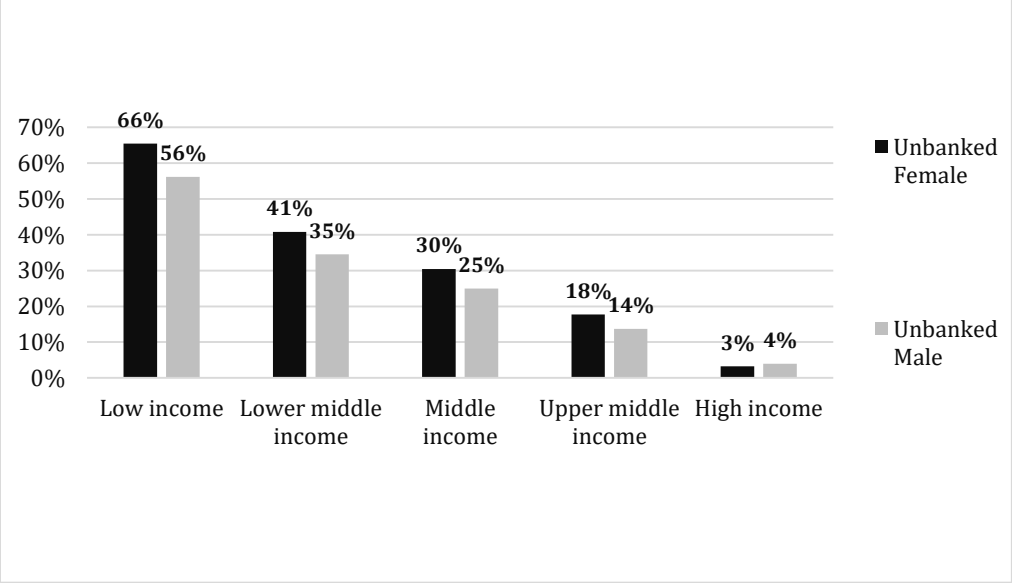
More than half of the global population of adults more than 15 years age are unbanked and reside in six countries. Where China and India being world's two large nations are home for over 24 percent of it followed by Pakistan.

Figure 6: World's Population with Unbanked Adults



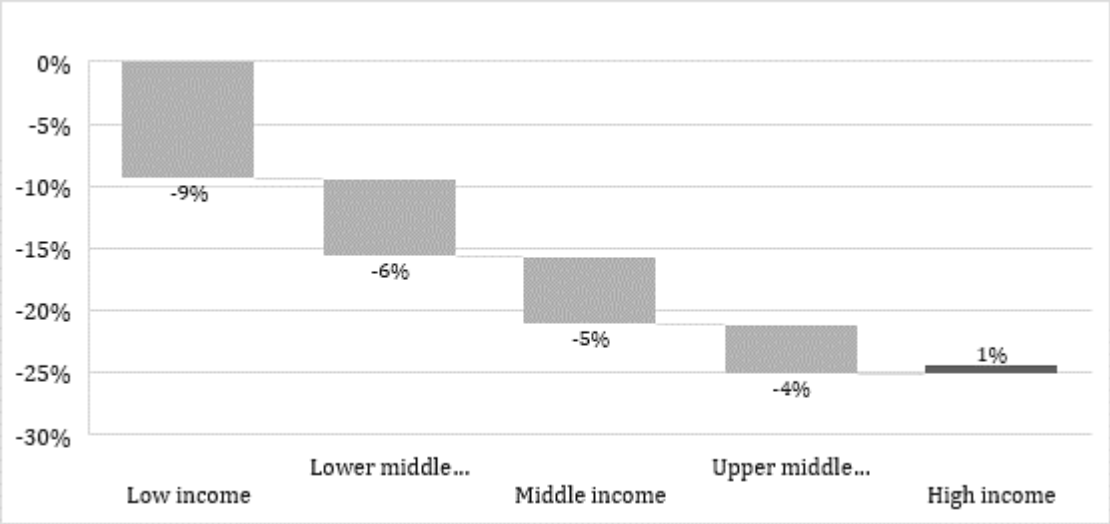
Women are disproportionately unbanked, with a higher percentage of women than men lacking banking access. About 13 percent of all adults in the world are women and 11 percent are men (Global Findex Database, 2021). Except in case of high income economies, rest of the economies are having more proportion of female than male adults (>15 years age) who are unbanked (figure 7).

Figure 7: Unbanked Adults (Male and Female) in Different Economies



The gender gap of unbanked adults is highest in case of low-income countries, that is almost ten percentage points. In case of low-middle income, gender gap of unbanked adults is six percentage points whereas in case of middle-income economies, it is five percentage points (see figure 8).

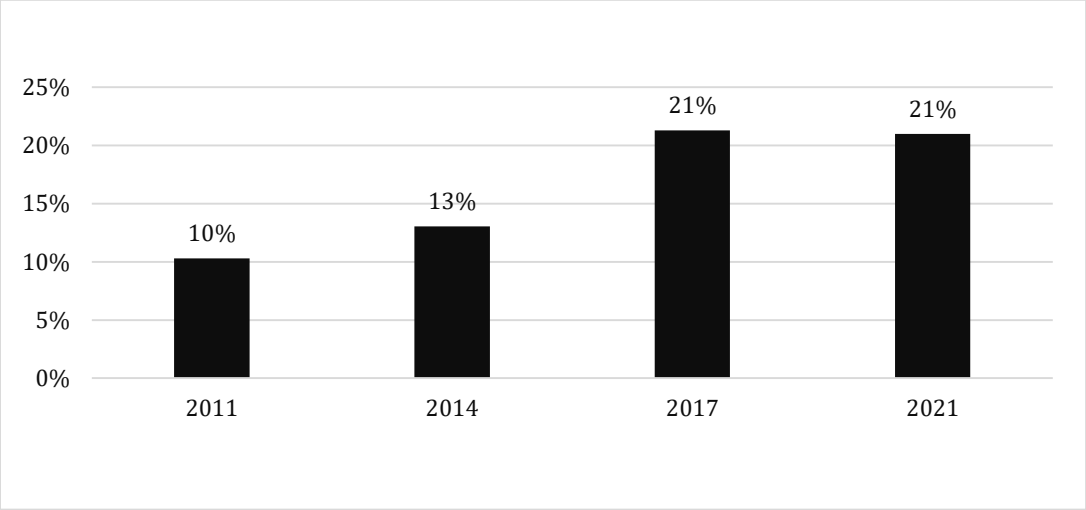
Figure 8: Gender gap of Unbanked Adults in Different Economies



3.2 Financial Literacy and Financial Inclusion in Pakistan

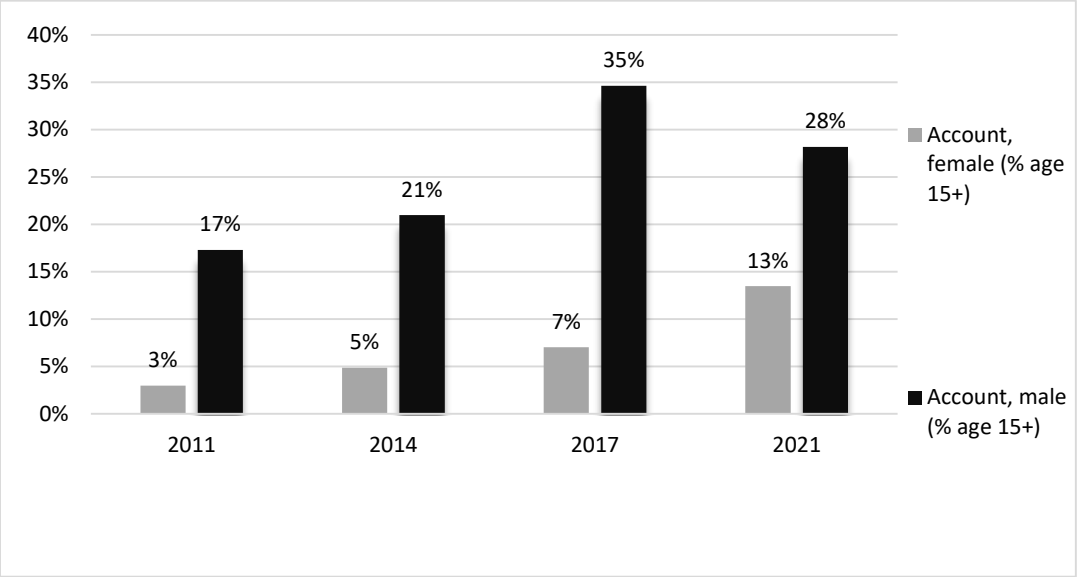
Pakistan belongs to the low-middle income group, where growth in account ownership of the country was mere 11 percentage points (from 10 percent in 2011 to 21 percent in 2021, see figure 9). Which is not even comparable to the average growth rate of its counterparts as countries belonging to low-middle income group have growth rate of 41 percentage points. And Pakistan is at the lowest rank amongst lower-middle-income economies in case of account ownership (Global Findex Database, 2021).

Figure 9: Account Ownership of Adults in Pakistan



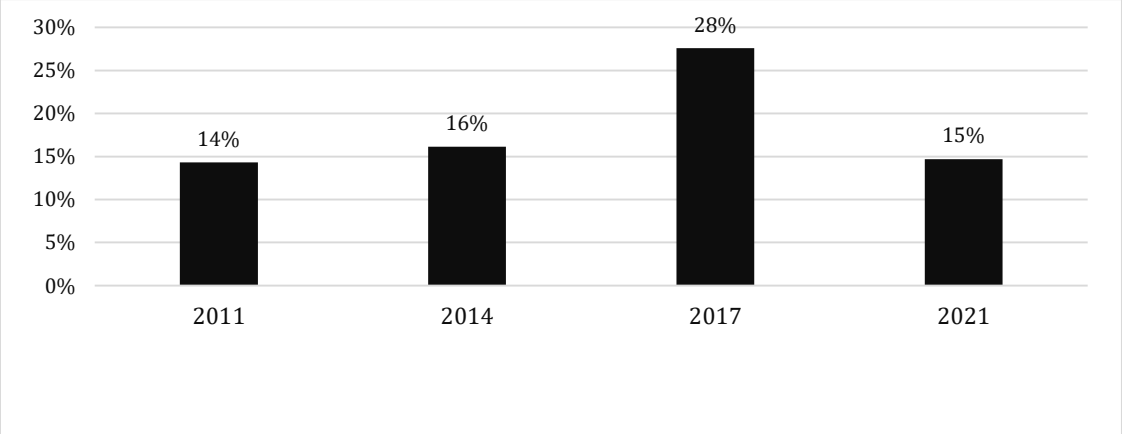
Moreover, the percentage of women having an account is even alarmingly low, with only 13% of women possessing a bank account (figure 10).

Figure 10: Account Ownership in Pakistani Adult Females and Male



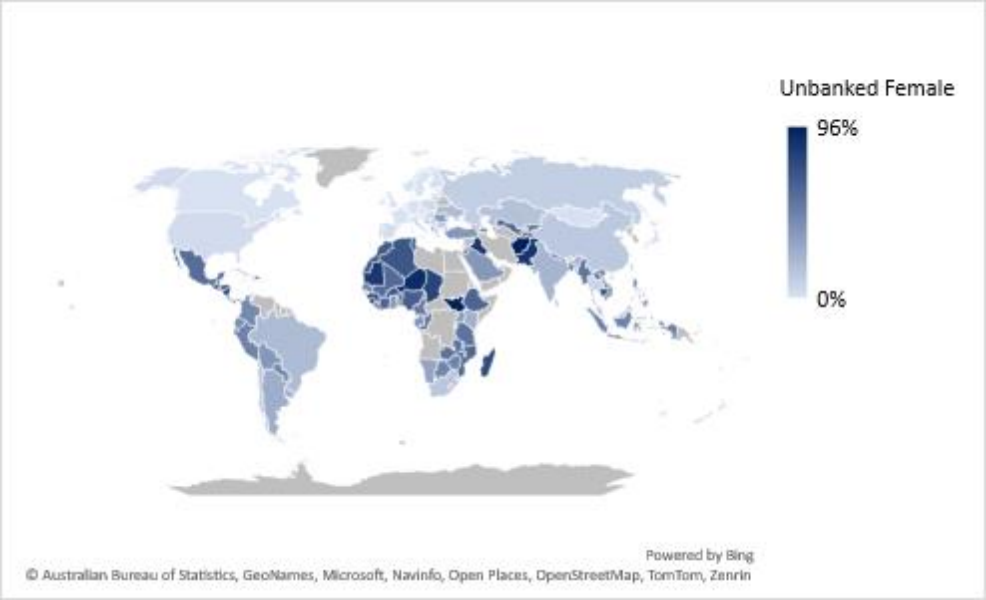
There is a significant gender disparity in account ownership in the country, with a notable 15% gap between men and women (figure 11).

Figure 11: Gender Gap in Account Ownership in Pakistan



Pakistan is having the third largest population of unbanked adults (114 million) more than 8 percent of the world's unbanked population (after both China and India). Whereas, Pakistani women who are unbanked constitute more than 87% of females, whereas this proportion is 72% in case of male counterpart (figure 12). Pakistan's unbanked population is predominantly comprised of women, who account for more than half of the individuals without access to banking services. Reported reasons of women exclusion from the formal banking services include women lack in having official identification, their little access to technology (like mobile phone), and financial illiteracy.

Figure 12: Unbanked Adults (Male and Female) in Global Economies



It is evident that labour force participation and financial inclusion are correlated to each other, for instance, in case of Pakistan, adults who are part of the labour force (29 percent) are roughly twofold than the number of individuals who are having an account than those who are not (15 percent).

Figure 13: Reasons of having no account (% without an account, age 15+))

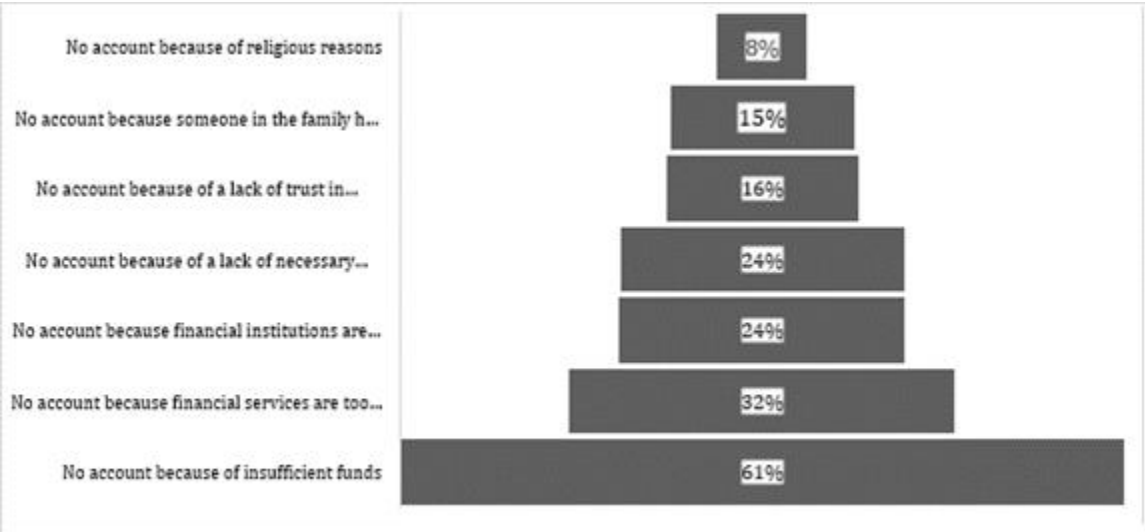
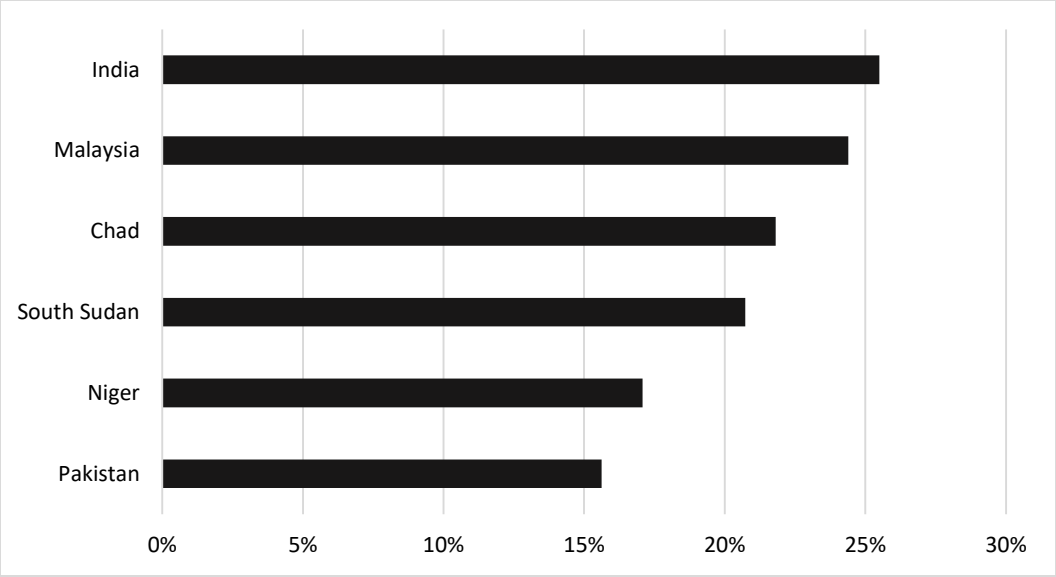


Figure 14: Can use account at a bank or financial institution without help if opened



3.3 Results of the Survey in Punjab

The previous section presented overall situation of financial inclusion and financial literacy at Pakistan level. This section address objective two to four of this study (to analyze gender gap in financial literacy and digital financial literacy among entrepreneurs in Punjab province of Pakistan; to evaluate the gender gap in financial inclusion among entrepreneurs in Punjab province of Pakistan; to assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab, Pakistan). It utilizes the data collected through survey using the questionnaire (Appendix-1) and methodology presented in sections 2.3-2.5.

3.3.1 Socio-Economic Characteristics of Respondents

There were round 58 percent male and 42 percent female entrepreneurs indicating a slightly higher proportion of male respondents, see the table given below:

Table 13: Gender of the Respondents

Gender	No of Respondents	Percent
Male	137	57.8
Female	100	42.2
Total	237	100.0

Proportion of men being slightly higher than that of women is also evident from many other studies (e.g. Reddy et at., 2024, Kamble et al. (2024),and Al-Shami et al., 2024 etc.) In case of Pakistan it points toward the tendency of men towards participating in entrepreneurial activities comparatively.

Table 14: Socio-economic Characteristics of the Respondents

Variable	Mean	Std. Deviation	Minimum	Maximum
Age	36.57	11.611	17	86
Education	12.66	3.782	0	19
Household Income	295.27K	1402K	15K	20M
Family Size	6.45	3.021	2	27
No. Of Dependents	3	1.891	0	16

Table 14 shows that the average age of entrepreneurs was around 37 years, revealing average respondents falling in their working-age time. The mean education was almost 13 years, which shows that average entrepreneurs were educated with a secondary or higher secondary level of education. This finding is not surprising as Faisalabad is a metropolitan area with a well-established educational infrastructure. However, the presence of uneducated entrepreneurs represents the prevalence of disparities in access to education.

The average household income of entrepreneurs was PKR 295 thousand, ranging from PKR 15 thousand to PKR 20 million, indicating economic diversity among the entrepreneurs. Faisalabad, being an industrial hub, houses individuals with a wide range of income from low to high levels.

The average family size was 6, pointing towards the norm of having large families in the region. The standard deviation shows the tendency of having even higher family size. There were entrepreneurs with as many as 27 household members revealing the extended family system common in the region. The average of three dependents per household indicates a typical family structure, with older members supporting children and elderly dependents. These results define the study area's socio-economic dynamics, including its industrial economy, large family size by norm, and continual challenges in achieving equitable access to education and income prospects.

3.3.2 Enterprise Profile

Table 153 presents types of enterprise present in the study area, namely, micro enterprise, small enterprise and medium enterprise (MSME).

Table 15: Types of Enterprise of Male and Female Respondents

Type Of Enterprise	Male (%)	Female (%)	Total (%)
Micro Enterprise	73 (53)	76 (76)	149 (63)
Small Enterprise	40 (29)	18 (18)	58 (25)
Medium Enterprise	24 (18)	6 (6)	30 (13)
Total	137	100	237

Table 15 reveals that the majority of the enterprises (63%) were micro-enterprises, with a higher proportion among female entrepreneurs (76%) compared to male entrepreneurs (53%). This

indicates that female entrepreneurs in the study area tend to participate in very smaller-scale businesses, possibly due to financial resource constraints (also highlighted in table 20) or societal norms of allowing them to participate on limited scale. Small enterprises constituted one fourth of the total, with male respondents more than that proportion (29%) participating at a higher rate than female entrepreneurs (18%). This difference probably is because of lack of access to capital in case of women (see table 19 and table 20). The last category was medium enterprises, which was the least common one, with only 13% of the total entrepreneurs. There was a notable gender gap prevailing in this category, where 18% of male entrepreneurs compared to just a meagre proportion (6%) of female entrepreneurs owned such businesses. This gender disparity may probably be due to high demand of financial and managerial assets associated with this category (medium enterprises), which females are thought to find harder to meet in the study area given the socio-economic challenges faced by them. This highlights the gendered differences in enterprise size, influenced by cultural, economic, and institutional factors prevalent in Faisalabad, Pakistan.

Table 16 presents the ownership structure of enterprise held by the respondents in the study area.

Table 16: Enterprise's Ownership Structure

Ownership Structure	Male (%)	Female (%)	Total(%)
Sole proprietorship	79 (58)	79 (79)	158 (67)
Partnership	30 (22)	13 (13)	43 (18)
Private Limited Company	18 (13)	4 (4)	22 (9)
Other	9 (6.6)	4 (4)	13 (5.5)
Total	136	100	236

The majority of respondents operated under a sole proprietorship structure, consisting of 67% of the total. It was more prevalent among female entrepreneurs (79%) compared to male counterparts (58%). The underlying reason of this result is likely to be the less requirement of formal capital and associated lesser legal obligations, making it a preferred choice for women entrepreneurs in Faisalabad. Partnerships accounted for 18% of the enterprises, with a higher proportion among male respondents (22%) than in females (13%). This might be because of male entrepreneurs' networking capabilities as highlighted in table 20. Additionally, society lack in trusting the capability of women in managing shared financial and managerial responsibilities. Private limited companies made up 9% of the total, with males (13%) significantly dominating female entrepreneurs (4%). This gap may be contributed to the barriers associated because of higher resource and regulatory barriers linked with private companies, which female entrepreneurs often find difficult to overcome due to limited access to finances (as highlighted in table 19 and table 20).

Table 17 presents the role of respondents in the enterprise.

Table 17: Respondents' Role as Owner/Manager/Others in the Enterprise

Role	Total (%)

100% owned by the respondent	150 (64.1)
Majority owned by the respondent	7 (3)
Majority owned by family members	19 (8)
Majority owned by other than family members	7 (3)
Respondent is manager	41 (17.5)
Respondent is contributing family worker	4 (1.7)
Others	6 (2.6)
Total	234 (3 missing)

Table 17 shows that the majority of businesses (64.1%) were 100% owned by the respondents. Businesses majority-owned by non-family members were uncommon (3%). Contributing family workers accounted for just 1.7% of the total, indicating minimal reliance on unpaid family labor. If we split this table (17) gender wise, the lower representation of women is found in managerial roles indicates potential barriers to leadership positions within their own enterprises.

Table 18: Respondents' Experience in Current Business (Years)

Mean	10.52
Std. Deviation	8.387
Minimum	0
Maximum	50

The majority of respondents had experience of involvement in the current business between one to ten years. Gender wise analysis of experience reveals that male entrepreneurs had relatively more experience as a higher percentage of males had four to ten years of experience. Whereas female entrepreneurs had a more even distribution of experience across all years of experience. In case to one to three years of experience, a higher percentage of female entrepreneurs (14.1%) were found falling in this category as compared to male entrepreneurs (11.3%). In case of the category of three to ten years of experience, male entrepreneurs dominated those of women with 43.6% and 30.3%, respectively. In case of eleven or more than eleven years of experience category a higher percentage of male respondents (21.1%) were reported as compared to female respondents (15.2%).

Table 19: Is Credit a Source of Funding to Start Respondents' Business?

Response	No. of Entrepreneurs	Percent
No	170	71.7
Formal sources	34	14.3

Informal sources	33	13.9
Total	237	100.0

Table 19 highlights that access to formal financial information is very limited, where a large majority of entrepreneurs (72%) had not accessed any form of credit (formal or informal). This finding reinforces the significance of financial literacy and financial inclusion. Access to formal financial sources is important for enhancing financial inclusion (Demirgüç-Kunt et al., 2022).

Table 20: Types of Gender Specific Challenges

Challenge	Male (%)	Female (%)	Total
Nothing	105(76.6)	34 (34)	139 (58.6)
Access to finance	11 (8)	27 (27)	38 (16)
Balancing work and family responsibilities	0 (0)	12 (12)	12 (5.1)
Societal attitudes	1 (0.7)	8 (8)	9 (3.8)
Networking opportunities	17 (12.4)	19 (19)	36 (15.2)
Other	3 (2.2)	0 (0)	3 (1.3)
Total	137	100	237

Respondents were asked about challenges associated with their gender and their responses are summarized in table 2. It is evident that the male entrepreneurs' large majority (77%) had not to face any such challenges, suggesting a comparatively smooth entrepreneurial experience in their case. Whereas roughly half of the female entrepreneurs (46%) reported struggling with either access to finance (27%) or networking (19%) which is consistent with research suggesting that women entrepreneurs often face difficulties in securing funding (World Bank, 2020). Balancing work and family responsibilities is a unique challenge for female entrepreneurs only. Literature supports this finding work-life balance for women entrepreneurs is evident (UNWomen, 2024).

3.3.3 Effect of Respondent's Status of Entrepreneur on their Livelihoods

The survey conducted in this study also assessed the impact of starting the current business on various aspects of livelihood of entrepreneurs. There were 5 different questions asked to reach at a final index, it is worth noting that reliability of these questions was 82 percent (Cronbach's Alpha).

Table 21: Impact of Starting Business on Livelihoods Index

Mean	4.5376
Std. Deviation	.42204
Minimum	3.00
Maximum	5.00

The results presented in table 21 reveal that starting a business impacts the livelihoods of respondents positively where majority of respondents (71%) reported maximum score (5) on the Likert scale. Nonetheless in case of female respondents predominantly lower scores (3.00-3.80) were also reported, it reveals that female entrepreneurs may face challenges. This result is consistent with limited access of female entrepreneurs to financial services (table 2).

3.3.4 Gender Gap in Financial Literacy and Digital Financial Literacy among Entrepreneurs in Punjab

3.3.4a Overall Financial Literacy

The Financial Literacy Index was constructed following methodology presented in the sub-section 2.5.1.2 (as well as Appendix-3), Cronbach's Alpha was found to be 63 percent for variables/constructs/questions included in FLI presenting 'acceptable' reliability for its construction (Sekaran and Bouge, 2016). FLI_SCORE was a standardized variable based on FLI index with 0-100 values range, where 0 means 'no financial literacy' and 100 means 'maximum financial literacy' levels.

Table 22: Financial Literacy Score Index

Mean	49.176
Std. Deviation	16.823
Minimum	7.14
Maximum	95.24

Table 3.22 reveals that the mean value scored by entrepreneurs on average was '49' representing presence of moderate level of financial literacy, which ranges from 7 to 95. The existence of large spread of this index with very low and very high FLI scores implies that there could be considerable gaps in financial literacy among different entrepreneurs (gender gap?)

Table 23: Financial Literacy Category Index

FLI_CAT	No. of Entrepreneur	Percent
Low Financial Literacy	49	20.7
Moderate Financial Literacy	155	65.4
High Financial Literacy	33	13.9
Total	237	100.0

Table 23 shows the results of the Financial Literacy Index (Categorized) variable, constructed on the basis of FLI_SCORE as discussed in the sub-section 2.5.1.2, this index is divided into three categories: Low, Moderate, and High levels of financial literacy. A large majority of respondents (86%) reported with low (21% respondents) or moderate (65.4% respondents) levels of financial literacy. And only 14 percent had high levels of financial literacy. These findings suggest that the category of entrepreneurs with low financial literacy need specific interventions.

3.3.4b Gender Gap in Financial Literacy

This sub-section addresses the first part of the second objective of this study (to analyse gender gap in financial literacy and digital financial literacy among entrepreneurs in Punjab province of Pakistan). Comparison of mean using independent sample t-test is presented below in table 24.

Table 24: Independent Samples Test: FLI SCORE Comparison Between Male and Female Entrepreneurs

	Gender	N	Mean	Std. Deviation	Std. Error Mean
FLI_SCORE	Male	137	54.414	14.548	1.243
	Female	100	42	17.144	1.714

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
FLI_SCORE	Equal variances assumed	4.019	0.046	6.014	235	0.000	12.41432	2.064	8.348	16.481
	Equal variances not assumed			5.863	191.833	0.000	12.41432	2.117	8.238	16.591

Results of independent samples t-tests in table 24 reveals a statistically significant differences in FLI_SCORE values between men and women. Where, mean FLI_SCORE mean value in case of male entrepreneurs is '54.414' showing 'moderate to high financial literacy' level. In contrast, mean FLI_SCORE mean value of female counterpart is considerably low (42) revealing 'low' level of financial literacy. The value of t_{cal} = 6.014 ($p < 0.01$), which indicates that this mean difference in financial literacy in case of male and female entrepreneurs is statistically significant.

Table 25 presents the result of the index FLI Categorized on overall basis. This index presents different levels of financial literacy among entrepreneurs, as given below:

Table 25: Financial Literacy Index (Categorized) * Gender Crosstabulation

Financial Literacy Index (Categorized)	Male (%)	Female (%)	Total (%)
Low Financial Literacy	12 (8.8)	37 (37)	49 (20.7)
Moderate Financial Literacy	102(74.5)	53 (53)	155 (65.4)
High Financial Literacy	23(16.8)	10 (10)	33 (13.9)
Total	137 (100)	100 (100)	237 (100)

Table 25 reveals that a large majority of female entrepreneurs, that is 90% is either having low financial literacy (37%) or moderate financial literacy (53%). In contrast, the majority of male entrepreneurs, that is around 85%, either have moderate financial literacy (74.5%) to high financial literacy (10%). Only 8.8% of male entrepreneurs have low financial literacy.

Table 26 presents the strength of association between Financial Literacy and Gender on the basis of the index of FLI_CAT, by using different statistics

Table 26: Association between Financial Literacy and Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.280	2	0.000
Likelihood Ratio	28.598	2	0.000
Linear-by-Linear Association	20.687	1	0.000

Phi	.345		0.000
Cramer's V	.345		0.000
Contingency Coefficient	.327		0.000

In table 26 the results of Chi-Square tests reveals a statistically significant association between Financial Literacy Index (Categorized) and Gender (p-value = .000). Whereas the Phi coefficient (.345) and Cramer's V (.345) indicate a moderate strength of association between the two variables. The results suggest that there are significant gender gaps in financial literacy levels, with female entrepreneurs tend to have 'lower financial literacy', whereas their male counterparts tend to have 'moderate to high financial literacy'. These findings have implications for financial education and policy initiatives targeting specific gender groups.

3.3.4c Overall Digital Financial Literacy

The Digital Financial Literacy Index was constructed following methodology presented in the sub-section 2.5.1.3 and Table 26 (as well as Appendix-4), Cronbach's Alpha was found to be 83 percent for variables/constructs/questions included in DFL presenting 'good' reliability for its construction (Sekaran and Bouge, 2016). DFL_SCORE was a standardized variable/index based on DFL variable with 0-100 values range, where 0 means 'no digital financial literacy' and 100 means 'maximum digital financial literacy' levels.

Table 27: Digital Financial Literacy Score Index

DFL_SCORE	Minimum	Maximum	Mean	Std. Deviation
	7.14	100.00	57.098	22.507

Table 28 reveals that the mean value scored by entrepreneurs on average was '57' representing the presence of moderate level of digital financial literacy, which ranges from 7 to 100. The existence of large spread of this index with very low and very high DFL_SCORE implies that there could be considerable gaps in financial literacy among different entrepreneurs (gender gap?)

Table 28 presents the result of the index DFL Categorized (DFL_CAT) constructed on the basis of DFL_SCORE as discussed in the sub-section 2.5.1.3 (Appendix-4 for details). This index is divided into three categories: Low, Moderate, and High levels of digital financial literacy among entrepreneurs, as given below:

Table 28: Digital Financial Literacy Category Index

DFL_CAT	No. of Entrepreneur	Percent
Low Digital Financial Literacy	49	20.7
Moderate Digital Financial Literacy	95	40.1
High Digital Financial Literacy	93	39.2

Total	237	100.0

Table 28 reveals that a large majority of respondents (86%) reported with 'low' (21% respondents) to 'moderate' levels of financial literacy (40.1% respondents). And only 39 percent had high levels of financial literacy. These findings suggest that the category of entrepreneurs with low to moderate digital financial literacy need targeted interventions.

3.3.4d Gender Gap in Digital Financial Literacy

This sub-section addresses the second part of the second objective of this study (to analyze gender gap in financial literacy and digital financial literacy among entrepreneurs in Punjab province of Pakistan). Comparison of means using independent sample t-test is presented below in table 3.16.

Table 29: Independent Samples Test: DFL_SCORE Comparison Between Male and Female Entrepreneurs

	Gender	N	Mean	Std. Deviation	Std. Error Mean
DFL_SCORE	Male	137	66.91	14.617	1.249
	Female	100	34.633	12.253	1.225

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
DFL_SCORE	Equal variances assumed	0.001	0.98	17.95	235	0.000	32.277	1.798	28.734	35.819
	Equal variances not assumed			18.448	230.47	0.000	32.277	1.75	28.829	35.724

Results of independent samples t-tests in table 3.16 reveals a statistically significant differences in DFL_SCORE values between men and women. Where, mean DFL_SCORE mean value in case of male

entrepreneurs is '66.91' showing 'moderate to high financial literacy' level. In contrast, mean DFL_SCORE mean value in case of female counterparts is considerably low (34) revealing 'low' level of financial literacy. The value of t_{cal} = 17.95 ($p < 0.01$), which indicates that this mean difference in digital financial literacy in case of male and female entrepreneurs is statistically significant.

Table 30 presents the result of the index FLI Categorized on overall basis. This index presents different levels of financial literacy among entrepreneurs, as given below:

Table 30: Digital Financial Literacy Index (Categorized) * Gender Crosstabulation

DFL_CAT	Male (%)	Female (%)	Total (%)
Low Digital Financial Literacy	8 (5.8)	41 (41)	49 (20.7)
Moderate Digital Financial Literacy	36 (26.3)	59 (59)	95 (40.1)
High Digital Financial Literacy	93(67.9)	0 (0)	93 (13.9)
Total	137 (100)	100 (100)	237 (100)

Table 30 reveals that all of female entrepreneurs were either having low digital financial literacy (41%) or moderate digital financial literacy (59%). Only 8% of male entrepreneurs have low financial literacy. In contrast, the majority of male entrepreneurs, that is around 68%, had high digital financial literacy, whereas not a single female entrepreneur had high level of digital financial literacy.

Table 31 presents the strength of association between Digital Financial Literacy and Gender on the basis of the index of DFL_CAT, by using different statistics

Table 31: Association between Digital Financial Literacy and Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	117.89	2	0.000
Likelihood Ratio	153.063	2	0.000
Linear-by-Linear Association	108.236	1	0.000
Phi	0.705		0.000
Cramer's V	0.705		0.000
Contingency Coefficient	-0.567		-0.037

In table 31 the results of Chi-Square tests reveal a statistically significant association between Digital Financial Literacy (Categorized) Index and Gender (p-value = 0.000). The Linear-by-Linear Association value (108.236) also reveals a positive correlation between digital financial literacy and gender. Additionally, the Phi coefficient (.705) and Cramer's V (.705) indicate a moderate strength of association between the two variables. The results suggest that there are significant gender gaps in digital financial literacy levels, with female entrepreneurs tend to have 'lower digital financial literacy', whereas their male counterparts tend to have 'high digital financial literacy'. These findings

have implications for digital financial education and policy initiatives targeting specific gender groups.

3.3.5 Gender Gap in Financial Inclusion among Entrepreneurs in Punjab

This section addresses the third objective of the study (to evaluate the gender gap in financial inclusion among entrepreneurs in Punjab province of Pakistan).

The Financial Inclusion Index (FII) was constructed following methodology presented in the sub-section 2.5.1.2 (as well as Appendix-2), Cronbach's Alpha was found to be 87 percent for variables/constructs/questions included in FII presenting 'good' reliability for its construction (Sekaran and Bouge, 2016). Values of FII were between 0 and 1, 0 means 'financially not included' and values close to 1 meant better financial inclusion. FII_Dummy was a standardized variable based on FII index with 0-1 values, where 0 means 'financially not included' and 1 means 'financially included.

Table 32: Financial Inclusion Index

Mean	0.688
Std. Deviation	0.245
Minimum	0
Maximum	1

Table 32 reveals that the mean value scored by entrepreneurs on average was '0.69' representing presence of moderate level of financial inclusion. The standard deviation is 0.245, which suggests a relatively narrow spread of FII scores.

Comparison of means using independent sample t-test is presented below in table 33.

Table 33: Independent Samples Test: FII Comparison Between Male and Female Entrepreneurs

	Gender	N	Mean	Std. Deviation	Std. Error Mean
FII	Male	137	0.758	0.202	0.017
	Female	100	0.593	0.266	0.027

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
FII	Equal variances assumed	19.091	0.00	5.433	235	0.000	0.16523	.03041	.10532	.22514

	Equal variances not assumed			5.208	176.791	0.000	.16523	.03173	.10261	.22784

Given the results provided in the table above, the Levene's Test's F is equal to 19.059 ($p < 0.01$), the null hypothesis of equality of variances get rejected. Which points towards the presence of a significant differences in variance between male and female entrepreneurs' level of financial inclusion.

On the basis of t-statistics being equal to 5.208($df = 177$, $p < 0.01$), where mean difference is nearly 0.22 (females - males) with $p < 0.01$). The significant value of t-test reveals that there is statistically significant differences in FII values between males and females. Where male respondents have higher financial inclusion index than female.

Table 34 presents the strength of association between Financial Inclusion (Dummy) and Gender on by using different statistics, as given below:

Table 34: Association between Financial Inclusion (Dummy) and Gender

FII_Dummy	Male (%)	Female (%)	Total (%)	
0	12 (8.8)	35 (35)	47 (19.8)	
1	125(91.2)	65 (65)	190 (80.2)	
		Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square		25.037	1	0.000
Likelihood Ratio		25.23	1	0.000
Linear-by-Linear Association		24.93	1	0.000

In table 33 the results of Chi-Square tests reveal a statistically significant association between Financial Inclusion (Dummy) Index and Gender (p-value = 0.000). The Linear-by-Linear Association value (24.93) also reveals a positive correlation between Financial Inclusion (Dummy) Index and gender. The results suggest that there are significant gender gaps in financial inclusion, with female entrepreneurs tend to less included whereas a large majority of their male counterparts tend to have be financially included.

3.3.6 Gender Gap in Financial Inclusion among Entrepreneurs in Punjab

This section address the forth objective of this study (to assess the effect of digital financial literacy on financial inclusion in female entrepreneurs in Punjab, Pakistan). This section follows the methodology presented in sub-section 2.5.1.4, where Binary Logistic Regression was planned to be followed and the results are presented below:

Table 35: Binary Logistic Regression (FII_Dummy: Dependent)

Table 35a Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	104.683	8	.000
	Block	104.683	8	.000

	Model	104.683	8	.000

Table 35b Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	125.947[a]	.364	.577

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Table 35c Classification Table[a]

	Observed		Predicted		
			FII_Dummy		Percentage Correct
			.00	1.00	
Step 1	FII_Dummy	0	28	18	60.9
		1	9	176	95.1
	Overall Percentage				88.3

a. The cut value is .500

Table 35d Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	FLI_SCORE	.012	.016	.567	1	.451	1.012
	DFL_SCORE	.114	.022	27.547	1	.000	1.121
	Gender	1.591	.764	4.335	1	.037	4.911
	Age	.039	.032	1.540	1	.215	1.040
	Education	.199	.068	8.614	1	.003	1.220
	HHI	.000	.000	3.674	1	.055	1.000
	Type of Enterprise	.468	.487	.924	1	.336	1.597
	Experience	-.025	.038	.424	1	.515	.975
	Constant	-10.072	2.413	17.417	1	.000	.000

a. Variable(s) entered on step 1: FLI_SCORE, DFL_SCORE, I5, I6, I8, I10, B6, B9.

Table 35e Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	136.915[a]	.403	.601

a. Estimation terminated at iteration number 9 because parameter estimates changed by less than .001.

Results presented in table 35 (a-e) reveal that the model has a good fit, with a significant chi-square value (104.683, $p < .001$). The Cox & Snell R Square value is 0.364, implying a moderate level of variance explained by the model. The Nagelkerke R Square value being 0.577 shows a moderate to strong level of variance explained by the model.

The model suggests that DFL_SCORE, gender, and education are significant predictors of financial inclusion. In case of DFL_SCORE, which is a significant predictor ($p < .001$), with an odds ratio of 1.121. The odds ratios indicate that for every unit increase in DFL_SCORE, increases the odds of financial inclusion by 12.1%. Gender (I5) is having positive relationship with financial inclusion where female entrepreneurs have 4.911 times the odds of being financially excluded compared to male respondents, holding all other variables constant ($p< 0.05$). In case of education(I8), every additional year of education increases the odds of financial inclusion 22% ($p < 0.01$).

3.4 Policy Recommendations

The last objective of this research was to provide policy recommendations on the basis of findings of this study.

The findings of this study highlight the need for targeted interventions to address the gender gap in financial inclusion among entrepreneurs in Punjab, Pakistan. The following policy recommendations are proposed:

Targeted Financial Education Programs: Design and implement targeted financial education programs for female entrepreneurs, focusing on digital financial literacy and financial management. These programs should be tailored to address the specific needs of female entrepreneurs and should be delivered through a variety of channels, including online platforms, workshops, and mentoring programs.

Promotion of Digital Financial Services: Promote the development and use of digital financial services, including mobile banking and digital payment systems. This can be achieved through partnerships between financial institutions, mobile network operators, and technology companies.

Increased Access to Formal Financial Services: Implement policies to increase access to formal financial services for female entrepreneurs, including microfinance and small business loans. This can be achieved through the development of specialized financial products and services tailored to the needs of female entrepreneurs.

Mentorship and Networking Programs: Establish mentorship and networking programs to connect female entrepreneurs with experienced business leaders and financiers. These programs can provide valuable guidance, support, and access to networks and resources.

Inclusive Policy Framework: Develop an inclusive policy framework that addresses the specific needs of female entrepreneurs, including access to finance, markets, and technology. This framework should be developed in consultation with female entrepreneurs, financial institutions, and other stakeholders.

By implementing these policy recommendations, the government and other stakeholders can help bridge the gender gap in financial inclusion among entrepreneurs in Punjab, Pakistan, and promote economic growth and development.

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APPENDICES

APPENDIX-1
QUESTIONNAIRE ON FINANCIAL LITERACY, DIGITAL FINANCIAL LITERACY AND FINANCIAL INCLUSION IN FAISALABAD (2024)

"Welcome to our survey on Financial Literacy, Digital Financial Literacy, and Financial Inclusion!

This survey is supported by funding from the RASTA CGP 6-064(PIDE) project., It aims at assessing your knowledge, skills, and experiences related to financial literacy, digital financial literacy, and financial inclusion. Your participation is voluntary, and your responses will be kept confidential. The survey should take approximately 20 minutes to complete.

SECTION I: GENERAL INFORMATION

SECTION II: ENTERPRISE PROFILE

SECTION III: FINANCIAL INCLUSION

SECTION IV: FINANCIAL LITERACY

SECTION V: DIGITAL FINANCIAL LITERACY

SECTION I: GENERAL INFORMATION Date:_____

[4]**I1.** Name:_____
I2. Address:_____Tehsil:_____
I3. Contact no:_____
I4. Email address (if you have one):_____
I5. Gender:_____
I6. Age: _____years
I7. Marital status
Single 2) Married 3)Divorced 4)Widowed 9)Other
I8. Education: _____years, mention name of certificate/diploma/degree/others:_____
I9. **Spouse' source of income:**
From respondent's business
From respondent's job
From family member's business (mention the member's relation to respondent)_____
From family member's job_____
Other (specify)_____
I10. What is your total monthly household income?_____ (PKR_____
I11. Family Size: _____
I11A. No of dependants:_____

[4] Code 'I' is used for information

SECTION II: ENTERPRISE PROFILE

B1. Name of business: _____
B2. Sector: 1)Trading 2) Manufacturing 3) Services
B3. Registration status
Registered with SECP
Registered with Registrar of firms
Registered with Cooperative societies
Not registered
Other (specify)_____
B4. Ownership structure
Sole proprietorship
Partnership
Private Limited Company
Cooperative
Other (please specify)_____
B5. Shareholding
100% owned by the respondent
Majority owned by the respondent
Majority owned by family members
Majority owned by other than family members
Respondent is manager
Respondent is contributing family worker
9) Other (specify)
B6.

Type of Enterprise	**Turnover (million PKR)**		**B6C. No of Employees**
	B6A. Annual	**B6B.Monthly**	
Micro Entreprise	Upto 5	Upto 0.42	< 10
Small Enterprise	Above 5 to 150	Above 0.42 to 12.5	10-50
Medium Enterprise	Above 150 to 800	Above 12.5- to <67	51-250

B7. Exact turnover of your business during last month(PKR 000)_____
B8. Age of this business**: _____**
B9. Respondent's experience in current business (years):_____
B10.

Founder Name	**B10A. Respondent's Relation with Founder (if any)**	**B10B. Capital investment (PKR)**	**B10C. Source of Funds**

B11. If it was a credit/loan, what was its source?
Formal sources (e.g. banks, financial institutions, mention name _____)
Informal sources (e.g. friends, family, relatives, any other please mention _____)
B12. Did you utilize credit to maintain or grow your business? (Yes/No)
B13. If yes, what was the source of the credit?
Formal sources (e.g., banks, financial institutions, loans)

Informal sources (e.g., friends, family, personal savings)

B14.

Current No. of Clients Per month	B14A. Same City	B14B.Other City	B14C.Other Province	B14D.International

B15. Assess the impact of starting your business on various aspects of your livelihood by selecting a response from the following scale

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
B15A. My spending power has increased	1	2	3	4	5
B15B. My food security has improved	1	2	3	4	5
B15C. Children have access to better education facilities	1	2	3	4	5
B15D. Me and my family have better health facilities	1	2	3	4	5
B15E. We have frequent recreational activities	1	2	3	4	5

B16. Have you faced any challenges specific to your gender in your entrepreneurial journey?
1)Yes 2) No 9) Any Comment_____

B17. If yes, please specify the challenges:
1)Access to finance 2)Balancing work and family responsibilities 3)Societal attitudes
4)Networking opportunities 9) Other (please specify)

SECTION III: FINANCIAL INCLUSION

Internet access

FI1. Do you have access to the Internet in any way, whether on a mobile phone, a computer, or some other device?

1. Yes 2. No

Mobile owner

FI2. Do you have a mobile phone that you use to make and receive PERSONAL calls?

1. Yes 2. No

FI2A. Do you use a mobile phone that belongs to someone else either by borrowing/paying for its use?

1. Yes 2. No

Awareness

DFL-1. Have you ever heard of something called Mobile Money?

1. Yes 2. No

Usage

DFL1-1 If having a mobile money account, please mention its name. Select all that apply

		Yes	No
DFL1-1A	JazzCash	1	2
DFL1-1B	Easypaisa	1	2
DFL1-1C	RAAST	1	2
DFL1-1D	UBL Omni	1	2
DFL1-1E	HBL Konnect	1	2
DFL1-1F	Meezan Bank's Digital Banking services	1	2
DFL1-1G	Digital Insurance	1	2

DFL1-1H	Any Other (mention name)	1	2

FIN3[5]. Do you have an account at a bank? If yes, is it your own account, a joint account, or someone else's account?

1. Yes 2. No

(If code 1 in FIN3, Continue; Otherwise, Skip to FIN9)

FIN4A. What is the nature of the account that you hold?

		Yes	**No**
FIN4A1	Single account	1	2
FIN4A2	Joint account	1	2
FIN4A9	Any other (please specify)	1	2

FIN4_1. What is the type of account you are having**:**

		Yes	**No**
FIN4_1A	current account	1	2
FIN4_1B	saving account	1	2
FIN4_1C	fixed deposit account	1	2
FIN4_1D	foreign currency account	1	2
FIN4_1E	investment account	1	2
FIN4_1F	mobile money account	1	2
FIN 4_1G	Any other (Please mention)	1	2

(If code 1 in FIN4-1F, also answer DFL-2)

FIN4_2. Have you downloaded a mobile app for your account (s):

1. Yes 2. No

(If code 1 in FIN4-2, also answer DFL-7)

FIN5. Do you, personally, have a/an Debit Card/ATM card?

1. Yes 2. No

(If code 1 in FIN5, Continue; Otherwise, Skip to FIN6)

FIN5A. In the PAST 12 MONTHS, have you used your OWN ATM/debit card DIRECTLY to make a purchase?

1. Yes 2. No

FIN6. Thinking about the use of your account, in PAST 12 MONTHS, did you ever use a MOBILE PHONE or the Internet to make payments, buy things, send or receive money, pay debt or do banking transactions?

*(**INTERVIEWER:** This should Not include transactions made through phone calls)*

1. Yes 2. No

FIN7. Do you, personally, have a credit card?

1. Yes 2. No

(If code1 in FIN7, continue; Otherwise, Skip to Read before FIN8

FIN7A. In the PAST 12 MONTHS, have you, personally, used your credit card?

1. Yes 2. No

[5] Code **'FIN'** stands for Financial Inclusion

FIN8. IN THE PAST 12 MONTHS, has money ever been DEPOSITED into your personal account(s)? This includes cash or electronic deposits, or any time money is put into your account(s) by yourself, an employer, or a2. Nother person or institution.

1. Yes 2. No

FIN8A. IN THE PAST 12 MONTHS, has money ever been WITHDRAWN/TAKEN OUT of your personal account(s)? This includes cash withdrawals you make in person, using your atm/debit card or mobile phone, electronic payments or purchases, checks, or any other time money is removed from your account(s) by yourself or another person or institution.

1. Yes 2. No

FIN8B. Do you typically keep any money in your personal account(s)?

1. Yes 2. No

Unbanked[6]

FIN9. Please tell me whether each of the following is A REASON why you personally DO NOT have an account at a bank or another type of formal financial institution.

		Yes	**No**
FIN9A	Because financial institutions are too far away	1	2
FIN9B	Because financial services are too expensive	1	2
FIN9C	Because you don't have the necessary documentation	1	2
FIN9D	Because you don't trust financial institutions	1	2
FIN9E	Because of religious reasons	1	2
FIN9F	Because you don't have enough money to use financial institutions	1	2
FIN9G	Because someone else in the family already has an account	1	2
FIN9H	Because you have no need for financial services at a formal institution	1	2
FIN9I	Because you did not have knowledge of how to open bank account	1	2
FIN9J	Any other (please specify)	1	2

FIN10. If you were to open an account at a bank or another type of formal financial institution, do you think you could use it by yourself, without the help of another person?

1. Yes 2. No

FIN11. If you were to open a mobile money account, do you think you could use it by yourself, without the help of another person? **(DFL: Mobile Money Proficiency)**[7]

1. Yes 2. No

FL: ACCESS TO FINANCIAL SERVICE PROVIDERS (SUPPLY SIDE)

FIN12 Please tell me whether it is easy for you to access a bank or another type of formal financial institution like:

		Yes	No
FIN12A	There is a usable access road leading to the nearest bank	1	2
FIN12B	Takes less than 15 minutes drive to reach the nearest bank	1	2
FIN12C	The cost of reaching the nearest bank is affordable for me	1	2

[6] Questions under 'Unbanked' are meant for those having no account

[7] The question is also related to Digital Finacial Literacy under sub-heading 'Mobile Money Proficiency', according to OECD

FIN12D	I live within 1 km of ATM that I can easily visit to access my account	1	2
FIN12E	It takes me less than 15 minutes to reach the nearest ATM	1	2

SAVINGS

FIN13. In the PAST 12 MONTHS, have you personally saved or set aside any money FOR your OLD AGE?

Yes 2. No

FL (Financial Behavior: Actively Saving OECD)[8]

FIN14. In the PAST 12 MONTHS, have you personally saved or set aside any money?

		Yes	No
FIN14A	Using an account at a bank or another type of formal financial institution ***(INTERVIEWER:*** *This can include using another person's account)*	1	2
FIN14A1	Using a mobile money account	1	2
FIN14B	Using an informal savings group/club like a *committee*	1	2
FIN14C	Saved in the form of property, livestock and/or gold	1	2
FIN14D	Cash at home	1	2
FIN14E	Any other source of saving (please specify)		

BORROWING

FL (Financial Behavior: Did not borrow to make ends meet OECD)

FIN15. In the PAST 12 MONTHS, have you, by yourself or together with someone else, borrowed money for health/medical or any other purposes?

Yes 2. No

(If code 1 in FIN15, Continue; Otherwise, Skip to FIN17)

FIN16. In the PAST 12 MONTHS, have you, by yourself or together with someone else, borrowed any money from any of the following sources?

		Yes	No
FIN16A	From a bank or another type of formal financial institution?	1	2
FIN16B	From family, relatives, or friends in the past 12 months?	1	2
FIN16C	From an informal savings group/club	1	2
FIN16D	Any other source of borrowing (please specify)		

FINANCIAL RESILIENCE

FIN17. Now, imagine that you have an emergency, and you need to pay some money. What would be the MAIN source of money that you would use to come up with that money within the NEXT 30 days? *(**INTERVIEWER**: If the respondent says "credit card," mark "borrowing from a bank, employer, or private lender.")*

FIN17A	Savings	1
FIN17B	Family, relatives, or friends	2
FIN17C	Money from working	3
FIN17D	Borrowing from a bank, employer, or private lender	4
FIN17E	Selling assets	5
FIN17F	Taking advance payment from clients	6
FIN17G	Some other source	7

[8] The question is also related to Financial Literacy under sub-heading 'Financial Behavior: Did not borrow to make ends meet', according to OECD

(I could not come up with the money) 8

FIN18. Do you have an insurance plan?

1. Yes 2. No

(If code 2 in FIN18, Continue; Otherwise, Skip to FIN18B)

FIN18A. What is the type of insurance plan that you have?

		Yes	No
FIN18A1	Life insurance	1	2
FIN18A2	Health insurance	1	2
FIN18A3	Housing insurance	1	2
FIN18A4	Car insurance	1	2
FIN18A5	Business Plan	1	2
FIN18A9	Any other (please specify)		

FIN18B. What are the reasons you do not have an insurance plan?

		Yes	No
FIN18B1	Insurance plans are too expensive	1	2
FIN18B2	I don't understand how insurance works	1	2
FIN18B3	I don't trust insurance companies	1	2
FIN18B4	I don't think I need insurance		
FIN18B9	Other (please specify)	1	2

PAYMENTS

FIN19. In the PAST 12 MONTHS, have you, personally, GIVEN or SENT money to a relative or friend inside Pakistan using a bank account or a mobile money account?

1. Yes 2. No

FIN20. In the PAST 12 MONTHS, have you personally RECEIVED MONEY from a relative or friend living in a different city or area inside Pakistan using a bank account or a mobile money account?

1. Yes 2. No

FIN21. In the PAST 12 MONTHS, have you personally RECEIVED MONEY as payment under your business activities using a bank account or a mobile money account?

1. Yes 2. No

FIN21A. In the PAST 12 MONTHS, have you, personally, made regular payments for your business utilities like electricity, water, OR trash collection?

1. Yes 2. No

SECTION IV: SECTION ON FINANCIAL LITERACY

BASIC (FINANCIAL) KNOWLEDGE OECD

FL1. What is the first step to open a bank account?

•Deposit money into the account •Choose a debit card design •Sign up for online banking •**Visit a bank branch with required documents** •Download the bank's mobile app

FL2. Which of the following statements about ATMs is INCORRECT?

•ATMs dispense cash •ATMs accept deposits •ATMs are also known as cash machines •**ATMs can only be used during banking hours**

FL3. What is the main difference between a current account and a savings account?

•Current account is for savings, while savings account is for daily transactions

•**Current account is for daily transactions, while savings account is for long-term savings**
•Current account earns higher interest, while savings account has lower fees
•Current account requires a higher minimum balance, while savings account has a lower minimum balance
•Current account is for businesses, while savings account is for individuals

FL4. What are the common ways to deposit or withdraw money from a bank account? (Select all that apply)

•Use an ATM •Visit a bank branch in person •Use online banking or mobile money app
•Mail a check or money order to the bank •**All of the above**

FL5. Which option is likely to yield better financial results?

- Saving in a bank
- **Investment**

Time Value of Money

FL6. If you deposit PKR 100 into a savings account with an annual interest rate of 10%, how **much will you have in the account after one year?**

• PKR 900 • **PKR 110** • PKR 540 • PKR 600

FL7. What is the average annual interest rate on credit cards in Pakistan?

• 5% •6% •15% •**36% or higher** •Unsure

Savings

FL8. What is the primary benefit of saving a portion of your income regularly?

•To increase spending power •To pay off debts •**To achieve long-term financial goals**
•To impress others •To splurge on luxuries •Other (please specify)

FL9. Which of the following assets is considered the most liquid, meaning it can be easily converted to cash without significant loss of value?

•Stocks•Bonds •Real Estate •**Cash** •Mutual Funds

Loans

FL10. You lend PKR 25,000 to a friend one day and he/she returns you PKR 25,000 back the next day. How much interest has he/she paid on this loan?

•**PKR 0**•PKR 100 •PKR 500 •PKR 1,000 •PKR 2,500

FL11. What is the current interest rate in Pakistan?

•**20.5%** •8% •5% •1%

Rish and Return

FL12. A high-risk and high-return investment strategy would be LEAST suitable for which group of investors?

•Young professionals •Entrepreneurs •Aggressive investors •**Elderly retired couples**

Inflation

FL13. Which group of people in Pakistan would be most severely affected by high inflation rates over the last several years?

•Fixed income earners (e.g., pensioners, government employees)
•Business owners and entrepreneurs •Investors and shareholders •Farmers & agricultural workers
•**Low-income households** and daily wage workers
•Other (please specify)

Remittances

FL14. Any family member residing in a foreign country?

1. Yes 2. No

FL14A. What is the primary purpose of remittances?
•To invest in stocks and bonds •To pay for education expenses
•**To support family members or friends in another country** •To purchase real estate
•To start a business •Other (please specify)

FINANCIAL ATTITUDE OECD

FL15. What is your response to these statements:

	Strongly Disagree	**Disagree**	**Neither Disagree nor Agree**	**Agree**	**Strongly Agree**
FL15 A. I find it more satisfying to spend money than to save it for the long run	1	2	3	4	5
FL15 B. I tend to live for today and let tomorrow take care of itself	1	2	3	4	5
FL15 C. Money is there to be spent	1	2	3	4	5

FINANCIAL BEHAVIOR

Keep Track of Money OECD

FL16. Are you the one responsible for making day-to-day decisions about money in your household?

1. Yes	2. No
FL16A.If Yes	•Personally •Jointly

V. DIGITAL FINANCING LITERACY

DFL-3. Select all that apply to describe the differences between e-Debit, e-Credit, and e-Money, *Select all that apply*
A. e-Debit deducts funds directly from your account,
B. e-Credit allows you to borrow funds,
C. e-Money is a prepaid balance,
D. All of the above,
E. None of the above

DFL-4. What is the primary benefit of using a digital asset management system to store and manage your financial assets?
A) Increased interest rates on deposits
B) Convenient and secure access to your financial assets
C) Higher returns on investments
D) Lower fees for transactions

DFL-5. What is the primary benefit of purchasing digital insurance compared to traditional offline insurance?
A) Higher premiums for better coverage
B) Convenient online purchase and management, faster claims processing, and often lower premiums
C) Limited coverage options
D) No online support

DFL-6. What should you do if you're unhappy with the service provided by a digital financial provider?
A) Close your account and switch to a different provider without reporting the issue
B) File a complaint with the relevant regulatory agency
C) Post negative reviews on social media without seeking resolution

D) Ignore the issue and hope it resolves itself

Digital Financial Services

DFL 7. Which of the following digital financial services are available in the market? (Select all that apply)

Mobile banking apps

Digital wallets (e.g., Apple Pay, Google Pay)

Cryptocurrency exchanges

All of the above

Usage

DFL-8. In the PAST 12 MONTHS, have you, personally, used a mobile phone to pay for a purchase IN a store?

*(**INTERVIEWER**: This should not include transactions made through phone calls.)*

1. Yes **2. No**

DFL-9. In the PAST 12 MONTHS, have you, personally, used a mobile phone or the Internet to…?

*(**INTERVIEWER**: This should not include transactions made through phone calls.)*

		Yes	**No**
DFL-9A	Send money to a relative or friend	1	2
DFL-9B	Make bill payments	1	2
DFL-9C	Buy something online	1	2

Mobile Money Proficiency

DFL-10. What is your response to these statements:

	Strongly Disagree	**Disagree**	**Neither Disagree nor Agree**	**Agree**	**Strongly Agree**
DFL-10A. It is easy for you to open a mobile money menu on your phone without assistance from anyone	1	2	3	4	5
DFL-10B. Once you opened the mobile money menu, it was easy to find particular menu options (such as "Send Money" or "Check Balance")	1	2	3	4	5
DFL-10C. It is easy for you to initiate a transaction (such as sending money or paying a bill) using the mobile money menu	1	2	3	4	5
DFL-10D. Once you initiated a transaction, it was easy for you to complete the transaction (such as entering the amount, confirming the details, and receiving a confirmation message)	1	2	3	4	5
DFL-10E. If you encounter an error while using mobile money (such as an incorrect PIN or insufficient balance), it is easy for you to correct the error and complete the transaction	1	2	3	4	5
DFL-10F. If you need to reverse or cancel a mobile money transaction (such as sending	1	2	3	4	5

money to the wrong person or changing your mind about a payment), it is easy for you to do so

Risks

DFL-11. Are you familiar with ways to keep your personal information and financial data safe when using online services like mobile money or online banking?

1. Yes **2. No**

DFL-12. Do you use strong, unique passwords for your accounts?

1. Yes **2. No**

DFL-12A. Do you share your bankd account password and PINs with somones?

1. Yes **2. No**

DFL-13. Do you know your rights if you are a victim of cyber fraud?", "How would you report cyber abuse?

1. Yes **2. No**

APPENDIX-2

FINANCIAL INCLUSION INDEX
2A-DIMENSION/SUB-DIMENSIONS AND RESPECTIVE QUESTIONS IN THE QUESTIONNAIRE

Dimension 1: Access to Financial Services
Sub-dimension 1.1: Account Holding
FIN3: Do you have an account at a bank? If yes, is it your own account, a joint account, or someone else's account?
FIN 5: Do you, personally, have a/an Debit Card/ATM card?
FIN 7: Do you, personally, have a credit card?
Sub-dimension 1.2: Access to Financial Service Providers (Supply Side)
FIN12A: There is a usable access road leading to the nearest bank
FIN12B: Takes less than 15 minutes drive to reach the nearest bank
FIN12C: The cost of reaching the nearest bank is affordable for me
FIN12D: I live within 1 km of an ATM that I can easily visit to access my account
FIN12E: It takes me less than 15 minutes to reach the nearest ATM
Dimension 2: Usage of Financial Services
Sub-dimension 2.1: Account Usage
FIN5A: In the PAST 12 MONTHS, have you used your OWN ATM/debit card DIRECTLY to make a purchase?
FIN6: Thinking about use of your account, in PAST 12 MONTHS, did you ever use a MOBILE PHONE or the Internet to make payments, buy things, send or receive money, pay debt or banking transaction?
FIN7A:In the PAST 12 MONTHS, have you, personally, used your credit card?
FIN8:IN THE PAST 12 MONTHS, has money ever been DEPOSITED into your personal account(s)? This includes cash or electronic deposits, or any time money is put into your account(s) by yourself, an employer, or another person or institution.
FIN8A:IN THE PAST 12 MONTHS, has money ever been TAKEN OUT of your personal account(s)? This includes cash withdrawals you make in person, using your ATM/debit card or mobile phone, electronic payments or purchases, checks, or any other time money is removed fr
FIN8B:Do you typically keep any money in your personal account(s)?
FIN19: In the PAST 12 MONTHS, have you, personally, GIVEN or SENT money to a relative or friend living in a different city INSIDE Pakistan? This can be money you brought yourself or sent in some other way.
FIN20: In the PAST 12 MONTHS, have youpersonally RECEIVED MONEY from a relative or friend living in a different city or area inside Pakistan using a bank account or a mobile money account?
FIN21: In the PAST 12 MONTHS, have youpersonally RECEIVED MONEY as payment under your business activities using a bank account or a mobile money account?
FIN21A: In the PAST 12 MONTHS, have you, personally, made regular payments for your business utilities like electricity, water, OR trash collection?
FIN4-2: Have you downloaded mobile app for your account (s)
Sub-dimension 2.2: Savings:
FIN13: In the PAST 12 MONTHS, have you personallysaved or set aside any money FOR your OLD AGE?
FIN14: In the PAST 12 MONTHS, saved or set aside any money?
FIN14A: Using a account at a bank or another type of formal financial institution?
FIN14A1: Using a mobile money account
FIN14B: Using an informal savings group/club like a committee or a person outside the family

FIN14C: Saved in the form of property, livestock and/or gold
FIN14D: Cash at home
FIN14E: Any other source of saving

Sub-dimension 2.3: Borrowings
FIN15: In the PAST 12 MONTHS, have you, by yourself or together with someone else, borrowed money for health/medical or any other purposes?
FIN16: In the PAST 12 MONTHS, have you, by yourself or together with someone else, borrowed any money from any of the following sources?
FIN16A:(From a bank or another type of formal financial institution?)
FIN16B: From family, relatives, or friends in the past 12 months?
FIN16C: From an informal savings group/club
FIN16D: Any other source of borrowing (please specify)
Sub-dimension 2.4: Financial Resilience:
Risk management: FIN17: Now, imagine that you have an emergency, and you need to pay some money. What would be the MAIN source of money that you would use to come up with that money within the NEXT 30 days?
Insurance:
FIN18: Do you have insurance plan?
FIN18A: What is the type of insurance plan that you have?
FIN18A1: Life Insurance
FIN18A2: Health insurance
FIN18A3: Housing insurance
FIN18A4: Car insurance
FIN18A5: Business Plan
FIN18A9: Any other (please specify)
Dimension 3: Awareness of Formal Products
Sub-dimension 3.1: FIN10: If you were to open an account at a bank or another type of formal financial institution, do you think you could use it by yourself, without the help of another person?
Sub-dimension 3.2: FIN11: If you were to open a mobile money account, do you think you could use it by yourself, without the help of another person? (DFL: Mobile Money Proficiency)

FINANCIAL INCLUSION INDEX
2B-STEPS OF COMPUTATION

Computation of Account holding (access to bank products)
AFS_Account_Holding =0.8*FIN3 + 0.1*FIN5 + 0.1*FIN7.
Computation of Access to Financial Services Providers (the supply side)
AFS_Access_Providers = (FIN12A + FIN12B + FIN12C + FIN12D + FIN12E) / 5.
Computation of Account Usage (usage of financial products)
UFS_Account_Usage = (FIN5A + FIN6 + FIN7A + FIN8 + FIN8A + FIN8B+ FIN19 + FIN20+ FIN21 + FIN21A) /10.

Computation of Savings
UFS_Savings = (FIN13 + FIN14) / 2.

Computation of Borrowings

UFS_Borrowings = FIN15.

Computation of Financial Resilience

UFS_Financial_Resilience = 0.8*FIN17A + 0.1*FIN17D + 0.1*FIN18.

Computation of Awareness

AFP_Awareness = (FIN10 + FIN11) / 2.

Computation of Access to Financial Services
AFS = 0.9*AFS_Account_Holding + 0.1*AFS_Access_Providers.

Computation of Usage of Financial Services
0.7*UFS_Account_Usage + 0.1*UFS_Savings + 0.1*UFS_Borrowings + 0.1*UFS_Financial_Resilience.

Computation of Awareness of Financial Services
AFP = AFP_Awareness.

Computation of Financial Inclusion
FII_i = 0.20*AFS + 0.75*UFS + 0.05*AFP.

FINANCIAL INCLUSION INDEX
2C-SPSS SYNTAX FOR FII AND FII DUMMY VARIABLES COMPUTATION

```
COMPUTE AFS_Account_Holding = 0.8*FIN3 + 0.1*FIN5 + 0.1*FIN7.
COMPUTE AFS_Access_Providers = (FIN12A + FIN12B + FIN12C + FIN12D + FIN12E) / 5.
COMPUTE UFS_Account_Usage = (FIN5A + FIN6 + FIN7A + FIN8 + FIN8A + FIN8B+ FIN19 + FIN20+ FIN21 + FIN21A) / 10.
COMPUTE UFS_Savings = (FIN13 + FIN14) / 2.
COMPUTE UFS_Borrowings = FIN15.
COMPUTE UFS_Financial_Resilience = 0.8*FIN17A + 0.1*FIN17D + 0.1*FIN18.
COMPUTE AFP_Awareness = (FIN10 + FIN11) / 2.

COMPUTE AFS = 0.9*AFS_Account_Holding + 0.1*AFS_Access_Providers.
COMPUTE UFS = 0.7*UFS_Account_Usage + 0.1*UFS_Savings + 0.1*UFS_Borrowings + 0.1*UFS_Financial_Resilience.
COMPUTE AFP = AFP_Awareness.

COMPUTE FII = 0.20*AFS + 0.75*UFS + 0.05*AFP.

EXECUTE.

*FII dummy computation

COMPUTE FII_Dummy = (FII > 0.50).
EXECUTE.
```

APPENDIX-3

FINANCIAL LITERACY INDEX

3A-DIMENSION/SUBDIMENSIONS AND RESPECTIVE QUESTIONS IN THE QUESTIONNAIRE

1.Dimension 1: Basic Financial Knowledge and Understanding

Banking Basics and Financial Products

FL1: What is the first step to open a bank account?(Correct Answer: Visit a bank branch with required documents (code=1, 0 otherwise))

FL2: Which of the following statements about ATMs is INCORRECT? (Correct Answer: ATMs can only be used during banking hours(code=1, 0 otherwise))

FL3: What is the main difference between a current account and a savings account? (Correct Answer: Current account is for daily transactions, while savings account is for long-term savings (code=1, 0 otherwise))

FL4: What are the common ways to deposit or withdraw money from a bank account? (Select all that apply) (Correct Answer: All of the above(code=1, 0 otherwise))

FL5. Which option is likely to yield better financial results? (Correct Answer: Investment (code=1, 0 otherwise))

Time Value of Money and Interest Rates

FL6: If you deposit PKR 100 into a savings account with an annual interest rate of 10%, how much will you have in the account after one year? (Correct Answer: PKR 110 (code=1, 0 otherwise))

FL7: What is the average annual interest rate on credit cards in Pakistan? (Correct Answer: 36% or higher(code=1, 0 otherwise))

Savings and Liquidity

FL8: What is the primary benefit of saving a portion of your income regularly? (Correct Answer: To achieve long-term financial goals(code=1, 0 otherwise))

FL9: Which of the following assets is considered the most liquid, meaning it can be easily converted to cash without significant loss of value? (Correct Answer: Cash(code=1, 0 otherwise))

Loans and Credit

FL10: You lend PKR 25,000 to a friend one day and they return PKR 25,000 the next day. How much interest has been paid on this loan? (Correct Answer: PKR 0(code=1, 0 otherwise))

FL11: What is the current interest rate in Pakistan? (Correct Answer: 20.5%(code=1, 0 otherwise))

Risk and Return

FL12: A high-risk and high-return investment strategy would be LEAST suitable for which group of investors? (Correct Answer: Elderly retired couples (code=1, 0 otherwise))

Inflation Awareness

FL13: Which group of people in Pakistan would be most severely affected by high inflation rates? (Correct Answer: Low-income households and daily wage workers(code=1, 0 otherwise))

Remittances Knowledge

FL14: What is the primary purpose of remittances? (Correct Answer: To support family members or friends in another country(code=1, 0 otherwise))

2. Dimension 2: Financial Attitudes

Attitudes Toward Money and Spending

FL15A: I find it more satisfying to spend money than to save it for the long run. (1 if response is 4 or 5 and 0 otherwise)

FL15B: I tend to live for today and let tomorrow take care of itself (1 if response is 4 or 5 and 0 otherwise).

FL15C: Money is there to be spent(1 if response is 4 or 5 and 0 otherwise).

3. Dimension 3: Financial Behaviour

Behavioural Aspects of Financial Management

FL16: Are you the one responsible for making day-to-day decisions about money in your household (0=No, 1=Yes)?

FINANCIAL LITERACY INDEX
3B- SPSS SYNTAX FOR FLI AND FLI CATEGORY VARIABLES COMPUTATION

```
COMPUTE FLI = 0.
IF (FL1 = 1) FLI = FLI + 1.
IF (FL2 = 1) FLI = FLI + 1.
IF (FL3 = 1) FLI = FLI + 1.
IF (FL4 = 1) FLI = FLI + 1.
IF (FL5 = 1) FLI = FLI + 1.
IF (FL6 = 1) FLI = FLI + 1.
IF (FL7 = 1) FLI = FLI + 1.5.
IF (FL8 = 1) FLI = FLI + 1.
IF (FL9 = 1) FLI = FLI + 1.5.
IF (FL10 = 1) FLI = FLI + 1.5.
IF (FL11 = 1) FLI = FLI + 1.5.
IF (FL12 = 1) FLI = FLI + 1.5.
IF (FL13 = 1) FLI = FLI + 1.5.
IF (FL14A = 1) FLI = FLI + 1.
IF (FL15A = 1) FLI = FLI + 1.
IF (FL15B = 1) FLI = FLI + 1.
IF (FL15C = 1) FLI = FLI + 1.
IF (FL16= 1) FLI = FLI + 1.

COMPUTE FLI_SCORE = (FLI / 21) * 100.

RECODE FLI_SCORE (0 thru 33.33=1) (33.34 thru 66.66=2) (66.67 thru highest=3) INTO FLI_CAT.
VARIABLE LABELS
FLI_CAT "Financial Literacy Index (Categorized)".

VALUE LABELS
FLI_CAT
1 "Low"
2 "Moderate"
3 "High".
```

APPENDIX-4
DIGITAL FINANCIAL LITERACY INDEX
4A-DIMENSION/SUBDIMENSIONS AND RESPECTIVE QUESTIONS IN THE QUESTIONNAIRE

Dimension 1: Basic Knowledge and Skills related to Mobile Money and Other Digital Products

Digital Financial Knowledge (DFK)

DFL-1: Have you ever heard of something called Mobile Money? (Y/N)

DFL1-1: If having a mobile money account, please mention its name. (1 if answer is correct 0 otherwise)

Understanding of Product Digital Asset Management

DFL-4**.** What is the primary benefit of using a digital asset management system to store and manage your financial assets? (Correct Answer: Convenient and secure access to your financial assets)

Understanding of Digital Alternatives

DFL-3. Select all that apply to describe the differences between e-Debit, e-Credit, and e- Money, *Select all that apply* (Correct Answer: All of the above,)

Understanding of Digital Insurance

DFL-5. What is the primary benefit of purchasing digital insurance compared to traditional offline insurance? (Correct Answer: Convenient online purchase and management, faster claims processing, and often lower premiums)

Knowledge of Customer Rights and Protection

DFL-6. What should you do if you're unhappy with the service provided by a digital financial provider? (Correct Answer: File a complaint with the relevant regulatory agency)

DFL 7. Which of the following digital financial services are available in the market? (Select all that apply)

Dimension 2: Knowledge of Digital Financial Services

2.1 Knowledge of Digital Financial Services

DFL-7. Which of the following digital financial services are available in the market?

2.2 Understanding of Digital Financial Services

DFL-9. In the PAST 12 MONTHS, have you, personally, used a mobile phone or the Internet to buy something online?

2.3 DFL-8. In the PAST 12 MONTHS, have you, personally, used a mobile phone to pay for a purchase IN a store?

Dimension 3: Digital Financial Proficiency

3.1 Mobile Money Proficiency

DFL-10A: It is easy for you to open a mobile money menu on your phone without assistance from anyone

DFL-10B: Once you opened the mobile money menu, it was easy to find particular menu options (such as "Send Money" or "Check Balance")

DFL-10C: It is easy for you to initiate a transaction (such as sending money or paying a bill) using the mobile money menu

DFL-10D: Once you initiated a transaction, it was easy for you to complete the transaction (such as entering the amount, confirming the details, and receiving a confirmation message)

DFL-10E: If you encounter an error while using mobile money (such as an incorrect PIN or insufficient balance), it is easy for you to correct the error and complete the transaction

DFL-10F: If you need to reverse or cancel a mobile money transaction (such as sending money to the wrong person or changing your mind about a payment), it is easy for you to do so

Dimension 4: Awareness

4.1 Awareness of Mobile Money

DFL-1: Have you ever heard of something called Mobile Money?

4.2 Understanding Financial Risks

DFL-11: Are you familiar with ways to keep your personal information and financial data safe when using online services like mobile money or online banking?

4.3 Financial Information and Advice

DFL-13: Do you know your rights if you are a victim of cyber fraud?", "How would you report cyber abuse?

4.4 Awareness of Cyber Risks and Protections

DFL-12: Do you use strong, unique passwords for your accounts?

DFL-12A: Do you share your banked account password and PINs with someone?

DFL-13: Do you know your rights if you are a victim of cyber fraud?", "How would you report cyber abuse?

DIGITAL FINANCIAL LITERACY INDEX
3B- SPSS SYNTAX FOR DFL AND DFL_CATEGORY VARIABLES COMPUTATION

```
**DFL computation

*compute dummy DFL1_1

COMPUTE DFL1_1 = ANY(1, DFL1_1A TO DFL1_1H).
EXECUTE.

*compute dummy DFL_9
```

```
COMPUTE DFL9 = ANY(1, DFL_9A, DFL_9B, DFL_9C).
EXECUTE.

*computation of DFL index

COMPUTE DFL = 0.
EXECUTE.

*Dimension 1: Basic Knowledge and Skills (11)

IF (DFL1_1 = 1) DFL = DFL + 1.
IF (DFL_4 = 1) DFL = DFL + 2.
IF (DFL_3 = 1) DFL = DFL + 2.
IF (DFL_5 = 1) DFL = DFL + 2.
IF (DFL_6 = 1) DFL = DFL + 2.
IF (DFL_7 = 1) DFL = DFL + 2.


*Dimension 2: Usage of Digital Financial Services (2)

IF (DFL9 = 1) DFL = DFL + 1.
IF (DFL_8 = 1) DFL = DFL + 1.


*Dimension 3: Digital Financial Proficiency (12)

COMPUTE DFL_10A_new = 0.
IF (DFL_10A = 4 OR DFL_10A = 5) DFL_10A_new = 2.
COMPUTE DFL_10B_new = 0.
IF (DFL_10B = 4 OR DFL_10B = 5) DFL_10B_new = 2.
COMPUTE DFL_10C_new = 0.
IF (DFL_10C = 4 OR DFL_10C = 5) DFL_10C_new = 2.
COMPUTE DFL_10D_new = 0.
IF (DFL_10D = 4 OR DFL_10D = 5) DFL_10D_new = 2.
COMPUTE DFL_10E_new = 0.
IF (DFL_10E = 4 OR DFL_10E = 5) DFL_10E_new = 2.
COMPUTE DFL_10F_new = 0.
IF (DFL_10F = 4 OR DFL_10F = 5) DFL_10F_new = 2.
COMPUTE DFL = DFL + (DFL_10A_new + DFL_10B_new + DFL_10C_new + DFL_10D_new + DFL_10E_new +
DFL_10F_new).

*Dimension 4: Awareness (5)

IF (DFL1 = 1) DFL = DFL + 1.
IF (DFL_11 = 1) DFL = DFL + 1.
IF (DFL_12 = 1) DFL = DFL + 1.
IF (DFL_12A = 1) DFL = DFL + 1.
IF (DFL_13 = 0) DFL = DFL + 1.

COMPUTE DFL_SCORE = (DFL / 30) * 100.

RECODE DFL_SCORE (0 thru 33.33=1) (33.34 thru 66.66=2) (66.67 thru highest=3) INTO DFL_CAT.

VARIABLE LABELS
```

```
DFL_CAT "Digital Financial Literacy (Categorized)".

VALUE LABELS
DFL_CAT
1 "Low"
2 "Moderate"
3 "High".


EXECUTE.
```

Ethics considerations/Risk & assumptions (if required)

Assumption: availability of number of female entrepreneurs depends upon so many constraints, so the number of such females becoming part of analysis depends upon their availability and response.