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ORIGINAL SCIENTIFIC PAPER

Determinants of Women's Financial Inclusion: Evidence from the Gulf and the Western Balkan Region

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A B S T R A C T

Women's financial inclusion represents a key element in enhancing women's entrepreneurship. The aim of this study is to investigate the impact of age, education, employment, income quintile, and region on the level of financial inclusion (FI). The data for the four Gulf countries (Gulf Cooperation Council) and five Western Balkan countries were gathered from the Global Findex Database 2017. The total sample includes 3,973 women. Multiple linear regression is used to investigate the impact of socio-demographic factors on FI. Additionally, the paper provides an overview of the latest available data on several indicators related to FI at the macro level. The results show that education, employment, and income have a statistically significant positive impact on FI. The relationship between age and FI is statistically significant, exhibiting an inverted U-shape. This means that FI increases up to 55 years, and after that transition point, it starts to decline. Moreover, the region plays a significant role, considering that the level of

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FI of the respondents from Western Balkan countries is lower than that of those from the Gulf region.

KEYWORDS: *financial inclusion index, socio-demographic factors, age, education, employment, income, Global Findex Database*

Introduction

Women's financial inclusion serves as a catalyst for entrepreneurial activity (Mhlongo, 2025; Ajide, 2020). Additionally, it fosters economic growth and bridges gender inequality (Ozili, 2024; Le Quoc, 2024; Pavón Cuéllar, 2021; Bashier et al., 2022). By enhancing financial inclusion, women can strengthen their economic position (Peterlechner, 2021). Marjanović et al. (2025) emphasized the importance of financial factors within the economic environment for foreign investors. Globally, the gender gap in financial inclusion persists (International Labour Organization, 2025). This is confirmed by Antonijević et al. (2022), who found significant differences between men and women in seven indicators related to financial inclusion. Women face struggles considering the existence of a gender gap in financial literacy (Potrich et al., 2024; Preston et al., 2024; Espinoza-Delgado & Silber, 2024), education (UNESCO, n.d.), participation in the labor market (Fernandez et al., 2024; Castellano & Rocca, 2020), and digital skills (Long et al., 2023; Kuroda et al., 2019). Despite previous studies investigating the drivers of FI in various national contexts, a gap remains in the literature concerning the Gulf and Western Balkan regions (Uddin et al., 2023; Šašić et al., 2024). These studies lacked a novel approach to measuring financial inclusion, overlooked several relevant factors, particularly the potential inverted U-shaped relationship with age, and failed to examine the influence of regions with diverse characteristics. (e.g., religion, culture, level of development, etc.) on the level of FI. Given all the previously mentioned points and the fact that women belong to a vulnerable group, the aim of this study is to determine the impact of socio-demographic factors on the level of women's FI in regions that are similar within countries but diverse across them.

Literature Review

The concept of financial inclusion encompasses individuals' ability to access financial products and services that respond to their needs (World Bank, n.d.). It can be improved by using digital financial services (Ocharive & Iworiso, 2024). The prerequisites for using digital financial channels include internet access, mobile devices, and an adequate level of digital skills. Additionally, Domazet and Marijanović (2024), Lazić et al. (2025), Ivanović and Simović (2020), and Jevtić et al. (2023) highlight the importance of digital competencies in enhancing inclusion within the digital ecosystem. A detailed overview of the latest available data on financial inclusion indicators in the Western Balkans and Gulf regions is presented in Table 1. Data for several countries, including Montenegro, Bahrain, and Kuwait, are not available.

Table 1: Overview of the financial inclusion indicators in the Western Balkans and Gulf region in 2021 (% of respondents)

Indicator	ALB	BIH	NM	SRB	SA	UAE
Financial institution account	44.17	79.34	85.29	89.42	74.32	84.56
Debit or credit card ownership	27.10	61.88	59.28	62.42	72.14	72.37
Saved at a financial institution or using mobile money account	10.48	19.54	14.83	18.63	36.60	10.65
Borrowed from a financial institution	13.39	21.30	22.10	20.65	32.28	22.46
Made a digital payment	17.65	51.09	65.78	59.10	72.11	75.05

Source: Demirgüç-Kunt et al. (2022).

Note: ALB – Albania; BIH – Bosnia and Herzegovina; NM – North Macedonia; SRB – Serbia; SA – Saudi Arabia; UAE – United Arab Emirates.

Prior studies have identified age as a significant determinant of FI (Dar & Ahmed, 2021; Shabir & Ali, 2022). However, many researchers reveal the existence of a non-linear relationship between age and the level of financial inclusion (Ha et al., 2025; Kumar & Pradhan, 2024; Antonijević et al., 2024; Balliester Reis, 2022). This means that financial inclusion rises

with age until reaching a peak, after which it declines. One possible explanation is that younger individuals are excluded because of limited financial literacy and insufficient resources, whereas older individuals tend to show reduced interest in financial products and services, especially after retirement.

Based on the aforementioned literature, the following hypothesis is proposed:

H1: There is a significant inverted U-shaped relationship between age and the level of FI.

It is stated that individuals with a higher level of education possess greater financial capabilities, knowledge, and awareness related to financial well-being (Jeyapaul, 2024). Education has been identified as a significant predictor of financial inclusion (Dar & Ahmed, 2021; Njanike & Mpofu, 2024; Shabir & Ali, 2022; Uddin et al., 2023). In the context of electronic banking and mobile banking applications, several studies suggest that individuals with higher educational attainment are more likely to use these financial services compared to those with lower levels of education (Shankar et al., 2020; Rouse et al., 2025). Based on the aforementioned findings, the following hypothesis is proposed:

H2: Education positively influences the level of FI.

Individuals who are excluded from the labor market often face financial exclusion (Botrić & Broz, 2017). Employment status is considered a key factor that positively impacts financial inclusion (Antonijević et al., 2024; Shabir & Ali, 2022). In the context of digital banking services, Çera et al. (2024) argue that employment status increases the likelihood of using these services. A possible explanation is that individuals in the workforce have access to financial resources and a greater demand for financial services, as they typically receive their salary through a financial institution account. Therefore, hypothesis H3 is formulated as:

H3: Employment positively influences the level of FI.

Numerous authors have stated that income represents a significant determinant of FI (Antonijević et al., 2024; Uddin et al., 2023; Dar & Ahmed, 2021; Balliester Reis, 2022; Njanike & Mpofu, 2024). Additionally, income positively influences the adoption of digital banking services, such as mobile banking (Almanaseer et al., 2024; Shankar et al., 2020). Given the results of previous studies, the hypothesis H4 is developed as:

H4: Income positively influences the level of FI.

The level of financial inclusion differs across countries (Ozili, 2021; Sha'ban et al., 2021; Song et al., 2025) due to variations in development levels, economic conditions, financial system stability, financial literacy, and other contextual factors. In this regard, it is important to examine whether regional affiliation among countries that may share certain internal similarities but differ across regions, has a significant influence on the level of FI. Therefore, the following hypothesis is proposed:

H5: Belonging to the Western Balkan or Gulf region significantly impacts financial inclusion.

Methodology

To investigate the impact of age, education, employment, income quintile, and region on FI, the data from the Global Findex Database 2017 were used for further analysis. The Global Findex databases exist for 2011, 2014, 2017, and 2021. Considering the importance of analyzing regions with diverse characteristics and the unavailability of data for 2021 for many Gulf region countries, the authors decided to analyze the 2017 data by incorporating the latest available country-level macro data. The total number of examined countries is nine, i.e., five Western Balkan countries (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia) and four Gulf region countries (Bahrain, Kuwait, Saudi Arabia, and the United Arab Emirates). Oman and Qatar were excluded from the analysis due to the unavailability of 2017 data. Table 2 presents the sample structure for each observed county.

Table 2: The structure of the sample for each observed country

Region	Country	Sample size	Age (average)	Education (%)		Employment (%)		Income quintile (%)	
Western Balkan	Albania	581	46.29	1	51.6	1	39.1	1	16.2
								2	16.7
				2	32.2			3	19.6
						0	60.9	4	21
				3	16.2			5	26.5
	Bosnia and Herzegovina	506	47.68	1	35.6	1	37.7	1	15
								2	16.8
				2	50.8			3	23.1
						0	62.3	4	25.1
				3	13.6			5	20
	Montenegro	500	43.71	1	15.8	1	49.2	1	17
								2	18.8
				2	68			3	16.8
						0	50.8	4	23.4
				3	16.2			5	24
	North Macedonia	560	51.80	1	32.1	1	33.4	1	11.1
								2	15.9
				2	44.3			3	18.4
						0	66.6	4	23
				3	23.6			5	31.6
	Serbia	520	50.12	1	21.7	1	41.7	1	14.6
								2	19.6
				2	61.2			3	20.2
						0	58.3	4	21.9
				3	17.1			5	23.7
	Total	2,667	47.97	1	31.9	1	40	1	14.7
								2	17.5
				2	50.6			3	19.6
						0	60	4	22.8
				3	17.5			5	25.3
Gulf	Bahrain	382	34.59	1	5.3	1	58.4	1	13.9
								2	17.5
				2	49.2			3	19.1
						0	41.6	4	25.4
				3	45.5			5	24.1
	Kuwait	305	35.83	1	0.7	1	59.3	1	15
								2	22
				2	48.2			3	19
						0	40.7	4	23
				3	51.1			5	21
	Saudi Arabia	362	30.14	1	8	1	55.2	1	17.1
								2	19.3

				2	55.5	0	44.8	3 21 4 19.9 5 22.7
				3	36.5			
	United Arab Emirates	257	37.22	1	3.9	1	70.4	1 16 2 21.8 3 20.6 4 21.4 5 20.2
				2	33.8			
				3	62.3	0	29.6	
	Total	1,306	34.16	1	4.7	1	60.1	1 15.5 2 19.9 3 19.9 4 22.5 5 22.2
				2	47.7	0	39.9	
				3	47.6			
TOTAL SAMPLE		3,973	43.43	1	23	1	46.6	1 15 2 18.3 3 19.7 4 22.7 5 24.3
				2	49.7	0	53.4	
				3	27.4			

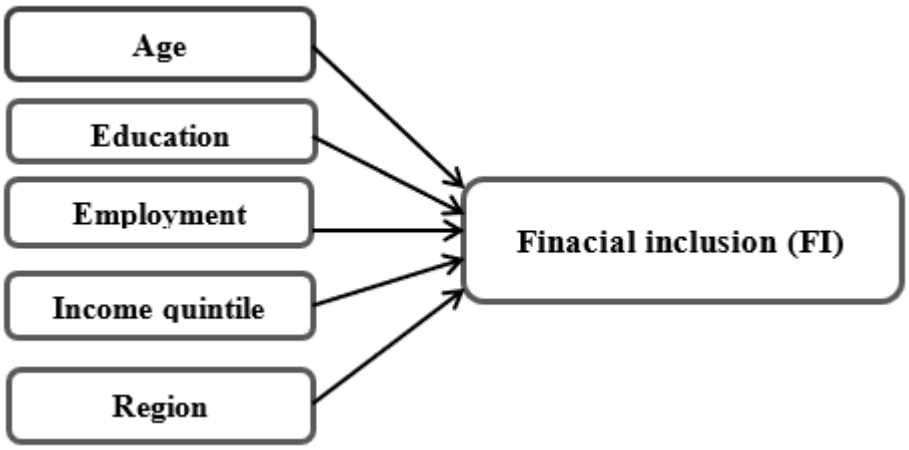
Notes: Education: 1 = primary school or less, 2 = secondary school, 3 = tertiary education or more; Employment: 1 = in the workforce, 0 = out of the workforce; Income quintile: 1 = 20 % of the population with the lowest income, 5= 20 % of the population with the highest income

Source: Authors' calculation based on Global Findex Database (Demirgüç-Kunt et al., 2018).

Among the observed countries, North Macedonia recorded the highest average age of female respondents, whereas Saudi Arabia recorded the lowest. Generally, the Gulf region has a young population, with an average age of 34.16. Regarding education, Western Balkan countries are dominated by those who have completed secondary school, while respondents from the Gulf region have mostly completed secondary education or higher. Around ¼ of the Western Balkan respondents belong to the fifth income quintile, while Gulf respondents are predominantly from the fourth and fifth income quintile groups. Approximately 60% of respondents in the Western Balkan region are out of the workforce, while around 60% are in the workforce in the Gulf region, indicating disparities in women's participation in the labor market.

The conceptual model developed for this research is presented in Figure 1.

Figure 1: Conceptual model



Source: Authors

Following the conceptual model, the dependent variable is financial inclusion (FI), while the independent variables include socio-demographic variables. The multiple linear regression was applied to test the hypotheses. A detailed overview of the variables in the model, along with their coding, is presented in Table 3. The statistical package SPSS 23 was used to conduct the analysis, with a significance level of 5% ($\alpha = 0.05$).

Table 3: Variables – coding for multiple linear regression

Variable type	Variable	Coding
Independent: socio-demographic factors	Age	The variable is continuous
	Age squared	The variable is continuous
	Education	1= primary school or less 2= secondary school 3= tertiary education or more
	Employment	1 = Employed 0 = Unemployed
	Income quintile	1= 20% of the population with the lowest income (0-20%) 2= 20-40% 3=40-60%

Variable type	Variable	Coding
		4=60-80% 5=20% of the population with the highest income (80-100%)
	Region	1= Gulf 2= Western Balkan
Dependent variable: Financial inclusion*	Financial Institution Account (FIA)	1 = Has an account at a financial institution 0 = Does not have an account
	Debit card ownership (DCO)	1 = Owns a debit card 0 = Does not own a debit card
	Saved at a financial institution in the past 12 months (S)	1 = Has saved 0 = Has not saved
	Borrowed from a financial institution in the past 12 months (B)	1 = Has borrowed 0 = Has not borrowed
	Made bill payments online (MBPO)	1 = Has made an online bill payment 0 = Has not made an online bill payment

** Financial inclusion is measured by financial inclusion index, composed of the FIA, DCO, S, B and MBPO.*

Source: Authors

In this study, the financial inclusion index, which measures the level of financial inclusion, is the modified version of the index introduced by Antonijević et al. (2024). Instead of the variable "any digital payment," the authors used "made bill payments online" as a proxy variable, considering there are no available data in the dataset for 2017. For the purpose of the analysis, it is calculated as follows:

$$\text{Financial inclusion index (FII)} = 0.3 * FIA + 0.1 * DCO + 0.1 * B + 0.1 * S + 0.4 * MBPO \quad (1)$$

This indicator takes values in the range from 0 to 1. The lowest level of financial inclusion is 0, while the highest value of financial inclusion is 1.

Results and Discussion

The sample structure with respect to the components of the financial inclusion index is presented in Table 4.

Table 4: Distribution of respondents by components of the Financial Inclusion Index in 2017, by country (% of respondents)

Country	FIA		DCO		S		B		MBPO		FII (average)
Albania	**1**	39.6	**1**	25.6	**1**	7.6	**1**	8.8	**1**	1.4	0.16
	0	60.4	**0**	74.4	**0**	92.4	**0**	91.2	**0**	98.6	
Bosnia and Herzegovina	**1**	60.5	**1**	42.5	**1**	6.3	**1**	6.9	**1**	8.7	0.27
	0	39.5	**0**	57.5	**0**	93.7	**0**	93.1	**0**	97.3	
Montenegro	**1**	74	**1**	39.8	**1**	10.4	**1**	16	**1**	5.8	0.31
	0	26	**0**	60.2	**0**	89.6	**0**	84	**0**	94.2	
North Macedonia	**1**	80.9	**1**	56.1	**1**	21.8	**1**	12.7	**1**	9.6	0.37
	0	19.1	**0**	43.9	**0**	78.2	**0**	87.3	**0**	90.4	
Serbia	**1**	78.3	**1**	65.2	**1**	14	**1**	14	**1**	14.6	0.39
	0	21.3	**0**	34.8	**0**	86	**0**	86	**0**	85.4	
Total Western Balkan	**1**	66.2	**1**	45.6	**1**	12.1	**1**	11.6	**1**	7.9	0.3
	0	33.8	**0**	54.4	**0**	87.9	**0**	88.4	**0**	92.1	
Bahrain	**1**	83.2	**1**	79.6	**1**	31.9	**1**	14.7	**1**	39.5	0.53
	0	16.8	**0**	20.4	**0**	68.1	**0**	85.3	**0**	60.5	
Kuwait	**1**	80	**1**	78.7	**1**	27.5	**1**	17.7	**1**	39	0.52
	0	20	**0**	21.3	**0**	72.5	**0**	82.3	**0**	61	
Saudi Arabia	**1**	60.5	**1**	55.8	**1**	10.2	**1**	5.5	**1**	21.3	0.34
	0	39.5	**0**	44.2	**0**	89.8	**0**	94.5	**0**	78.7	
United Arab Emirates	**1**	78.6	**1**	75.1	**1**	25.3	**1**	16.3	**1**	42.4	0.52
	0	21.4	**0**	24.9	**0**	74.7	**0**	83.7	**0**	57.6	
Total Gulf	**1**	75.3	**1**	71.9	**1**	23.6	**1**	13.2	**1**	34.9	0.47
	0	28.1	**0**	28.1	**0**	76.4	**0**	86.8	**0**	65.1	
TOTAL SAMPLE	**1**	69.2	**1**	54.2	**1**	15.9	**1**	12.1	**1**	16.8	0.36
	0	30.8	**0**	45.8	**0**	84.1	**0**	87.9	**0**	83.2	

Source: Authors' calculation

Respondents from the Gulf region demonstrate a higher level of financial inclusion, as evidenced by higher percentages in each component of the financial inclusion index, including account ownership, debit card

ownership, saving at and borrowing from a financial institution, and making bill payments online.

The results of the multiple regression models are presented below (Table 5).

Table 5: Summary of the model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525a	.276	.275	.239026001207031

Source: Authors' calculation

The results indicate that the model is statistically significant ($F(6, 3966) = 251.538$, $p < .001$), while the predictors explain 27.5% of the variance in financial inclusion.

A detailed overview of the results of the multiple linear regression is presented in Table 6.

Table 6: Multiple linear regression analysis - results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.022	.032		.694	.488
Age	.006	.001	.405	5.539	**.000**
Age^2	-5.470E-5	.000	-.334	-4.480	**.000**
Education	.101	.007	.254	15.326	**.000**
Employment	.120	.009	.214	13.861	**.000**
Income quintile	.031	.003	.155	10.765	**.000**
Region	-.111	.009	-.186	-12.218	**.000**

Source: Authors' calculation

The results of the multiple linear regression suggest that all hypotheses are supported.

The analysis reveals that a significant inverted U-shape relationship exists between age and FI. To calculate the transition point, the following formula is used:

$$\text{Transition point} = -\frac{\beta_{age}}{2*\beta_{age^2}} \quad (2)$$

The turning point is 54.88, indicating that financial inclusion increases up to that age, after which it begins to decline. The results align with those of other authors (Balliester Reis, 2022; Kumar & Pradhan, 2024). However, the results are opposite to those of Zins and Weill (2016). A possible explanation for this finding is that younger individuals, due to financial limitations and unemployment, are excluded, while older individuals tend to show less interest in financial services in later years. The results of the analysis suggest that the level of education has a significant positive influence on financial inclusion. This finding is consistent with those of Park and Yi (2025), Song et al. (2024), Luo (2024), and Turhan (2024) but contrasts with earlier evidence from Chaudhary et al. (2022), who found no significant association between education and usage of DFS. Employment was found to have a significant positive influence on women's financial inclusion, as evidenced by Bekele (2023), Balliester Reis (2022), and Soumaré et al. (2016), indicating that employed women have access to financial resources and a greater interest in using financial services. Achakpa and Radović-Marković (2018) claim that education and entrepreneurship development can be crucial drivers of women's employment and empowerment. Regarding the income quintile, the results indicate a significant positive influence on FI. This finding aligns with the results of Park and Yi (2025) and Nguyen et al. (2023), but differs from those reported by Onyia and Tagg (2011). The region is also a statistically significant predictor, indicating a lower level of financial inclusion among women from the Western Balkans compared to those in the Gulf region. Given the cultural, digital infrastructure, and development differences between these regions, this finding is consistent with the results of Song et al. (2025), Ozili (2021), and Sha'ban et al. (2021).

Although this study contributes to the broadening of the theoretical knowledge base, it has several limitations. First, the findings cannot be generalized to women from other regions. Future research should include women residing in the least developed countries. Second, the model explains 27.5% of the variance, indicating the need to incorporate additional

variables. Further studies could examine the influence of digital skills and financial literacy levels on financial inclusion. Third, this study analyzes data from 2017. Researchers should explore more recent data from Gulf countries when it becomes available in the next Global Findex Database.

Table 7 provides an overview of the results.

Table 7: The overview of the results

Hypothesis	Description	Result
H1	Age → FI (inverted U-shape)	✓
H2	Education → FI	✓
H3	Employment → FI	✓
H4	Income quintile → FI	✓
H5	Region → FI	✓

Source: Authors' calculation

The findings underscore the importance of national policies that focus on both young and older women, enhancing their opportunities to attain higher levels of education, participate in the labor market, and generate income.

Conclusion

Women's financial inclusion represents a crucial area for improvement, as it contributes to reducing gender inequality and fostering economic growth (Ozili, 2024; Le Quoc, 2024). Considering that women face numerous obstacles in education and labor market participation, it is important to investigate the predictors of their financial inclusion. Previous studies have not analyzed regions such as the Western Balkans and the Gulf, which are characterized by diverse cultures, levels of digital infrastructure, and stages of development, using a modified version of the financial inclusion index.

The aim of this study is to examine the impact of socio-demographic factors on women's financial inclusion. The data were gathered from the Global Findex Database 2017, as data for most Gulf countries were unavailable in 2021. To test the hypotheses, multiple linear regression was

applied. The results indicate that age, education, employment, income quintile, and region significantly influence women's FI. The study identifies an inverted U-shaped relationship between age and FI. Thus, financial inclusion increases up to the age of 55, after which it starts to decrease. Enhancing financial inclusion should be a strategic priority for relevant stakeholders, including policymakers, ministries of finance and economic development, central banks, and international development organizations, as it is a critical driver of women's entrepreneurship (Mhlongo, 2025; Ajide, 2020; Goel & Madan, 2019; Fareed et al., 2017).

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