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Gender digital divide and political participation in selected Arab countries

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Introduction: This study examines the gendered digital divide and its impact on political participation in 10 Arab countries. It focuses on how unequal internet access influences political engagement in a region characterized by some of the lowest global rates of women's political participation.

Methodology: The study uses data from the Arab Opinion Index and applies multivariate logistic regression stratified by gender. It analyzes the digital divide with internet usage, types of social media, and users' purposes as indicators, using age, income, education level, marital status, and employment as control variables.

Results: The gender digital divide is less evident in countries with high internet access, while it remains more pronounced in states where internet usage is limited, particularly among women. Even if there is a weak relationship between internet use and political participation, our findings indicate that targeted use (especially when centered on public concerns) can meaningfully boost political engagement.

Implications: These results point to the importance of going beyond internet access alone. What also matters is how the internet is used and for what purpose. When digital tools are used to address public concerns or connect with broader communities, they become a means of influence, not only through communication, but also through political participation. In these cases, women are more likely to express their opinions, gain power, and take part in political change across the Arab world.

KEYWORDS

gender, social media, digital divide, logistic regression, political participation, Arab society

1 Introduction

Digital technologies play an increasingly vital role in democratic processes across Arab countries. Within this digital political transformation, women have emerged as a significant demographic category. Nonetheless, the gender digital divide (disparate access to means of digital communication resources) continues to constrain women's political participation. This applies to both formalized activities, such as voting and party membership, as well as informal political participation, like volunteering. The International Telecommunication Union (ITU, 2022), reports that 75% of Arab men access the internet, compared to 65% of women. This disparity is more

pronounced than the global average (Jafari, 2022). Beyond internet access, developing digital skills is essential for effective social integration, including the knowledge and attitudes needed to fully participate in the digital world (Hong and Kim, 2021).

This digital divide is not only a technological issue, but rather a manifestation of social inequalities (Lambrecht and Tucker, 2019; Bargain et al., 2019; Raïq and Roberts, 2022). The unequal access to new technology of communication between men and women may vary depending on the social determinants of age, income, employment status, education attainment, and degree of urbanization (Elena-Bucea et al., 2021). The gender gap could also increase between rich and poor or developing countries (Antonio and Tuffley, 2014). According to the United Nations (UN, 2021), the Gulf Cooperation Council (GCC) countries have the highest internet usage rates, with more than 90% of their populations as internet users. In 2021, the gap was most pronounced between Qatar, which ranked first at 99.7%, and Mauritania, which recorded the lowest percentage of less than 50%. These differences became more evident when examining the gender digital divide (Raïq and Roberts, 2022). The situation is even more critical in the poorest Arab countries, where internet access among women remains below 30%, as seen in Mauritania and Yemen (UN, 2021).

It may seem that political participation has increased for women due to the opportunities provided by technology and social media to stay informed about the political arena. However, these opportunities do not necessarily translate into genuine participation (Barney, 2000; Barney et al., 2016).

The gender gap remains a barrier despite the opportunities offered by social media platforms. Through platforms like Instagram and Twitter, Arab women have greater possibilities to express their views on contentious issues and participate in civil society. In recent years, Arab women have increasingly made their presence felt in civic engagement (focusing on issues ranging from environmental issues to education reform) rather than political participation (political party and parliament), a sector traditionally dominated by men (Yassin and Hoppe, 2019). Despite challenges such as societal norms and the digital divide, women in the Arab world are utilizing social media platforms mostly to increase awareness, rally support, and connect with local communities. Nonetheless, a significant gap persists, particularly in female representation in public life and leadership roles. Representation in decision-making positions continues to lag, and despite some progress in parliamentary representation, Arab women remain underrepresented. In fact, some Arab countries are experiencing a decline in the number of women elected to parliament (UN Women Arab States, 2015; IPU, 2021).

This study highlights the complex relationship between the gender digital divide and political participation in Arab countries, focusing on how socio-economic contexts influence women's engagement in political processes. It emphasizes the need to address barriers to digital access. To explain how digital inequality translates into differentiated patterns of political participation, the study is guided by an integrated theoretical framework that connects many concepts related to the digital society.

2 Theoretical lens of digital participation

This research adopts a comprehensive theoretical framework that unifies many concepts to explore the gender digital divides in Arab

societies. Digital citizenship theory considers online participation an important part of today's civic life. From this perspective, the ability to access, understand, and effectively use digital tools has become integral to exercising democratic rights in the twenty-first century (Mossberger et al., 2007). In this framework, digital inclusion encompasses not only access, but also the development of digital literacy (the ability to effectively use digital tools), participation in informed dialogue (engaging in thoughtful online discussions), and meaningful involvement in public decision-making processes (van Deursen and van Dijk, 2019). When people do not have enough access to digital tools because of social or economic differences, they are left out and have less power to shape political decisions or hold institutions accountability (van Dijk, 2020). In the Arab world, where traditional methods of political participation often fail, digital avenues can serve as potent alternatives, as the internet and social media foster cultures and spaces for civic expression and public discussion. The digital divide thus operates at multiple levels, determining who participates and offering variations in modes of participation. A feminist perspective adds to this digital citizenship viewpoint by highlighting the gendered patterns that emerge with new communication technologies and their unequal power dynamics (Wajcman, 2004). Feminist scholars have maintained that, generally, the digital environment reproduces the social hierarchies and cultural biases that deny women visibility or agency in the public domain (Gill, 2016; Harcourt, 2023). To deepen this understanding, structuration theory (Giddens, 1984) shows that while institutional structures like laws and digital platforms influence women's participation, individuals also have the agency to uphold or change these structures.

It is this ambiguous duality of digital media as both constraining and enabling that reveals the complexity of the gender digital divide. In Arab societies, where many legal, economic, or cultural barriers could limit women's offline participation, digital spaces could be considered both channels and battlegrounds for civic or political engagement. Digital citizenship theory may explain much facilitative networking, competency, and participation within the digital arena. However, feminist media theory reveals strong constraints stemming from social and cultural inequities.

These two concepts significantly overlap in the way they define agency: one foregrounds its civic foundations, while the other highlights its gendered dimensions. Bringing them together generates a gender-aware understanding of digital citizenship that examines women's online engagement across multiple layers of experience, including technological access, social identity, and political agency (Wajcman, 2004; Kennedy et al., 2022; Antonio and Tuffley, 2014). This understanding fits comfortably within new developments regarding gendered citizenships, focusing on how civic and political participation is shaped both by digital infrastructures and socio-cultural hierarchies (Kennedy et al., 2022; van Dijck et al., 2018). In this context, social media has emerged as an important tool for political mobilization, providing women with alternative channels to express their opinions and lead collective actions. The effective use of social media can amplify women's voices and promote inclusion. Social media platforms play a crucial role in enhancing digital skills and facilitating political expression and mobilization (Velásquez and Quenette, 2018). Platforms like Instagram and Twitter can empower Arab women to voice their opinions on contentious issues, raise awareness, and engage in civil society initiatives (Yassin and Hoppe, 2019). Researchers explored in their study communication ethics in Arab social networks,

with a focus on Twitter. They highlight how these platforms are utilized for mobilization and discourse (Velásquez and Quenette, 2018). Their findings reveal critical insights into both the opportunities and challenges presented by social media for Arab women's informal political engagement. Using digital tools for meaningful political engagement requires ethical communication, which is essential for sustaining effective online activism, particularly among women. Addressing challenges such as online harassment requires strengthening ethical practices that avoid misinformation, promote inclusion, and build credibility (Malkawi and Ambusaidi, 2021).

This view also intersects with Intersectionality (Crenshaw, 1989), emphasizing how gender, class and place combine to influence digital and political access (Zheng and Walsham, 2021; Shiferaw, 2024). The integration of intersectionality is crucial to understanding why digital participation among women is not a uniform experience. This framework links directly to findings in this study related to disparities by education level, income, or social status... showing how multiple identities intersect to shape online engagement. For instance, a well-educated, urban woman may experience digital empowerment very differently than a rural woman with limited access and digital literacy, despite both being women. Intersectionality thus sharpens the explanatory power of digital citizenship theory by revealing how overlapping systems of constraints affect not only access but also the meaning and outcomes of political participation.

Indeed, such a construction of the gender digital divides position the phenomenon in both structural and cultural aspects. The understanding of digital citizenship is thus where women's socioeconomic inequalities interact with gendered social structures in shaping women's openness to digital involvement and political expression (Shiferaw, 2024). In applying this framework to Arab contexts, global debates on digital rights and gender justice show how technology can either reinforce or reshape power dynamics, depending on who can access and use it, and how it is governed. In this regard, the current study, built around this integrated framework, explores how access to the internet differently affects women and men in terms of their social constructions of internet use and other underlying factors, which overall lead toward further political engagement (both formal and informal) in Arab countries. The analysis considers whether socio-economic variables such as education, income, and employment status have an effect on gender digital divide, and how the purpose of online engagement relates to different levels of political participation. By developing inquiries into various concepts, the study positions itself to discover ways in which digital inclusion and gendered agency influence civic participation within the Arab public sphere.

3 Materials and methods

This study examines the gender digital divide and the potential for equal access to digital knowledge and resources. It addresses the concept of political participation and identifies some spheres where individuals can express their citizenship. It explores some areas of political participation whether formal or informal while investigating gender inequalities in terms of digital divide. For analytical purposes, the data used comes from Arab Opinion Index (AOI) to find out whether Arab countries differ when it comes to accessing the Internet, and how this affects political participation by gender. When the

percentage of internet use in a community is low, will this have an impact on women's political participation? The gender issue may overlap with other socio-economic variables such as age, income, employment status, and educational level, which could increase or decrease the impact on political participation. In addition, according to several studies (Wang, 2007; Younggil et al., 2019), the level of internet use and the purposes behind it may differently affect the political participation in gender perspective. This is why this paper explores the impact of social media on political participation stratified by gender. The data provided by AOI offers a set of variables measuring the level of internet and social media use as well as the purpose of social media use in different scales in relation to political participation in selected Arab countries. Considering the conceptual framework, available variables, and the current state of research, we focused on the following key research questions:

- What are the gender-based disparities in political participation, and to what extent is the gender digital divide prevalent in Arab countries?
- How do socio-economic status (SES) factors of age, income, employment status, and education interact with gender to impact women's political participation in the Arab world?
- How do internet access and purposes of social media use influence Arab women's participation in both formal and informal political activities?

The data used in this study comes from Arab Opinion Index 2019–2020. The importance of this research lies in the use of advanced quantitative tools, especially with the availability of coordinated data for selected Arab countries (Jordan, Tunisia, Sudan, Iraq, Palestine, Kuwait, Lebanon, Egypt, Morocco and Mauritania). The sample represents 16,500 respondents from the countries mentioned above (The survey relies on self-reported responses collected through face-to-face interviews). The analysis is developed in three parts:

- *Descriptive and comparative analysis of political participation rates by gender.* This part helps to explore the first research question. We will compare the percentages of men and women who have participated to political activities in the selected Arab countries. The Arab Opinion Index (AOI) data contain a set of variables to measure two forms of political participation: Informal participation and formal participation. This distinction is also supported by Ekman and Amna (2012). For the informal participation, the Arab Opinion Index data includes variables via the following dummy questions (with the possible answers: yes/no): 1- "During the past 12 months, have you signed a petition or a letter of document of protest?" 2- "During the past 12 months, have you participated in a peaceful demonstration/march or sit-in?" 3- "During the past 12 months, have you joined an activist group working to lobby/support/mobilize for a public or societal cause?" A new variable (informal participation) is created as follows: 1- Affirmative response to at least one of the three aforementioned questions, 0- Non-participation in any of the three activities mentioned. Regarding formal political participation, the AOI data contains variables about activities directly related to voting in elections and party affiliation. It includes the following questions (with the possible answers: yes/no): 1- "Did you vote in the past/do you intend to vote in the

upcoming elections?" 2- "Are you affiliated with a political party/collective/current or group?" 3- "Do you intend to join a political party/collective/current or group in the future?" A new variable (formal participation) is created as follows: 1: Affirmative response to at least one of the three aforementioned questions, or 0: non-participation in any of the activities mentioned.

- *Comparisons using "bar charts" and "countries distribution charts" based on internet use and gender digital divide.* This part helps to explore the first and second research questions. The AOI includes a variable measuring internet use, based on respondents' self-assessment of their internet usage on a scale from one to five, where one indicates almost no internet use, and five indicates usage several times a day. Using this variable, the selected Arab countries are ranked by their levels of internet use among women and men. Subsequently, a countries distribution charts will illustrate the levels of internet use alongside the gender digital divide, comparing these findings to other socio-economic determinants in the selected Arab countries included in this study.
- *Multivariate logistic regression to quantify the impact of internet use and social media on political participation.* This part helps to explore the third. The multivariate logistic regression stratified by gender (two models: one for women and the other one for men) is used to analyze the impact of independent variables on the dependent variable (political participation). The independent variables include:
 - Internet use.
 - Social media used (Facebook, Twitter, Snapchat, Instagram, Telegram, and YouTube). These variables are recoded in binary response according to the intensity of use: 1: very frequent/frequent, 0: low/no use.
 - The purpose of Internet use via social media on a scale from one (never) to five (very frequently). Nine variables are selected from the question: What is the purpose when using social media?
 - SM 1: To contact family and friends.
 - SM 2: To meet new people.
 - SM 3: To learn about social and cultural activities/events.
 - SM 4: To find out what people are talking about.
 - SM 5: To interact with a social issue.

SM 6: To interact with a political issue.

SM 7: To get news/political information.

SM 8: To express an opinion on current political events.

SM 9: To organize political activities for a public cause/general issue.

- The model control for socio-economic and demographic variables (age, income, level of education, employment status, and marital status).

The regression tables present "odds ratios" (Hosmer and Lemshow, 2013; Hilbe, 2016) to evaluate the predictive power of the independent variables and their impact on political participation (the dependent variable) through two logistic regression models. The first model focuses on "formal participation," while the second examines "informal participation." To enhance the models' performance and explanatory power, the final regression models retain only independent variables with statistical significance at the 0.05 level, selected using the backward stepwise deletion regression method (Hosmer and Lemshow, 2013; Wong and Mason, 1985). Additionally, the models incorporate a weight variable, assigning a value (weight) to each respondent in the dataset to correct sampling errors.

4 Results

4.1 Political participation and gender gap

Figure 1 shows the differences in the level of formal political participation across Arab countries. Men are generally more engaged in formal political participation compared to women. Kuwait and Mauritania exhibit the highest rates of political participation for both men and women, with the gender gap reaching 7 percentage points in Kuwait. The gender gap is particularly pronounced in Palestine and Egypt compared to other Arab countries. In contrast, countries like Tunisia, Mauritania, Morocco, Iraq and Lebanon show almost no gender difference. Jordan records a low level of formal political participation for both men and women (less than 45%).

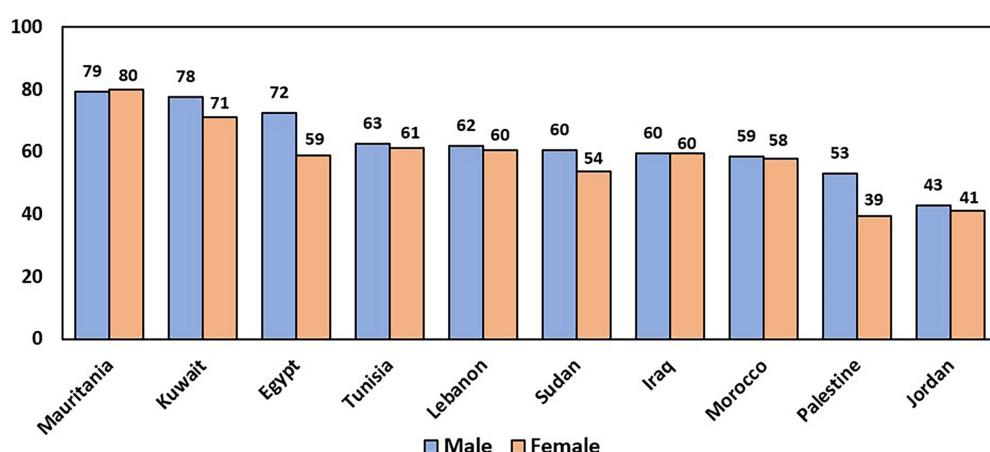


FIGURE 1

Percentage of formal political participation by gender. Source: The graph was produced by the authors using data from the Arab Opinion Index (AOI).

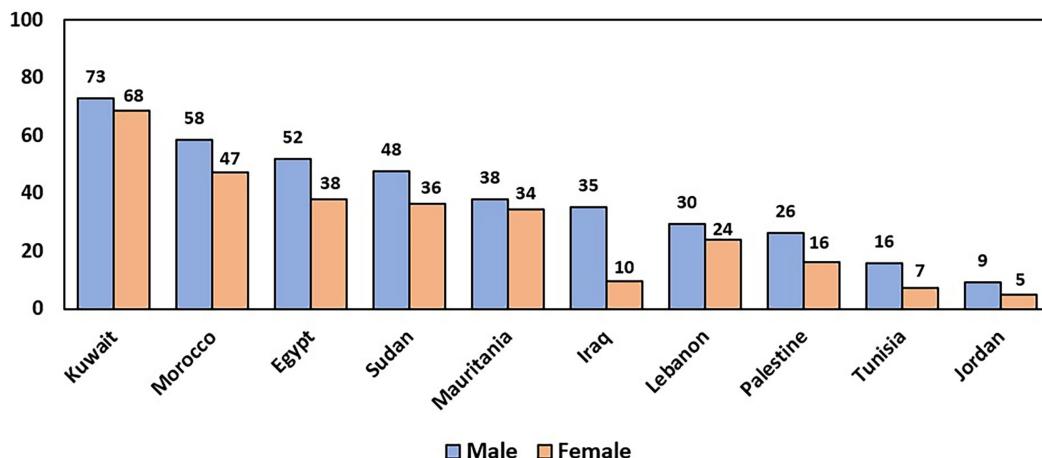


FIGURE 2

Percentage of informal political participation by gender. Source: The graph was produced by the authors using data from the Arab Opinion Index (AOI).

Figure 2 illustrates that the percentages of informal political participation are lower compared to formal political participation, as shown in Figure 1. In Arab countries, citizens are usually less engaged in informal political activities, and the gender gap is significantly larger than in formal political participation. In Jordan, only 5% of women report participating in informal political activities, while this percentage rises to 7% in Tunisia. The highest levels of women's informal political participation are observed in Kuwait (68%), Morocco (47%), Egypt (38%), Sudan (36%), and Mauritania (34%). The most pronounced gender gaps are in Iraq (25 percentage points), Egypt (14 percentage points), and Sudan (12 percentage points).

4.2 Internet use and gender gap

Figure 3 illustrates the average level of internet use on a scale from one to five (where 0 indicates no internet use, and 5 indicates very intensive use). The highest levels of internet use are observed in Kuwait (the wealthiest country among the compared societies), Lebanon, and Jordan. In these countries, there is almost no gender gap in internet use. The lowest levels of internet use are found in Sudan, Tunisia, and Mauritania, where the gender gap is more pronounced. In most Arab countries, women tend to use the internet less frequently than men.

Figure 4 presents the distribution of Arab countries according to the relationship between the overall level of internet use (scale from 0 to 5) and the digital divide based on gender, income, education, and age. Each panel illustrates one dimension of inequality, showing how specific forms of the digital divide correspond with differences in overall connectivity within each country.

The first graph (top left) represents the digital divide based on gender, which appears relatively narrow compared to other dimensions. Kuwait, Lebanon, and Jordan demonstrate high internet use with low gender disparities, indicating more inclusive access, whereas Tunisia and Mauritania display somewhat larger gaps, reflecting persistent but moderate inequality. The second graph (top right) depicts the digital divide based on age, showing that generational differences remain a key factor in digital inclusion. Countries such as Morocco, Egypt, and Tunisia exhibit wider divides between younger and older populations,

while Kuwait, Lebanon, and Jordan show smaller age-related gaps that correspond to their higher overall connectivity.

The third graph (bottom left) focuses on the digital divide based on income. The results indicate that where access to digital resources varies sharply by income level, overall internet use also tends to be lower. Egypt, Tunisia, and Mauritania display the widest income-related divides, while Kuwait and Lebanon maintain balanced access across income groups and stronger overall connectivity.

Finally, the fourth graph (bottom right) highlights the digital divide based on education, which shows the strongest correlation with the overall level of internet use. Countries with higher educational attainment, such as Kuwait, Lebanon, and Jordan, exhibit more equitable digital access, while Tunisia, Egypt, and Mauritania record lower connectivity and larger educational divides.

Taken together, the four graphs confirm that the overall digital divide in Arab countries is shaped by multiple, intersecting dimensions of inequality. Among these, education and income-based divides exert the greatest influence on total connectivity, followed by age, while the gender-based divide remains the narrowest.

4.3 The impact on formal political participation

Internet use does not significantly impact formal political participation¹ (such as voting, intending to vote, political party affiliation, or intention to affiliate) in most Arab countries (Table 1).

¹ While the analysis identifies associations rather than causal effects, the use of terms such as impact reflects theoretically informed expectations drawn from research on digital citizenship and political communication. In this perspective, digital access and online participation are understood to shape individuals' exposure to information, opportunities for civic expression, and perceptions of political efficacy within their sociopolitical environments. The findings should therefore be read as patterns that align with and support these theoretical propositions, rather than as evidence of direct causal mechanisms.

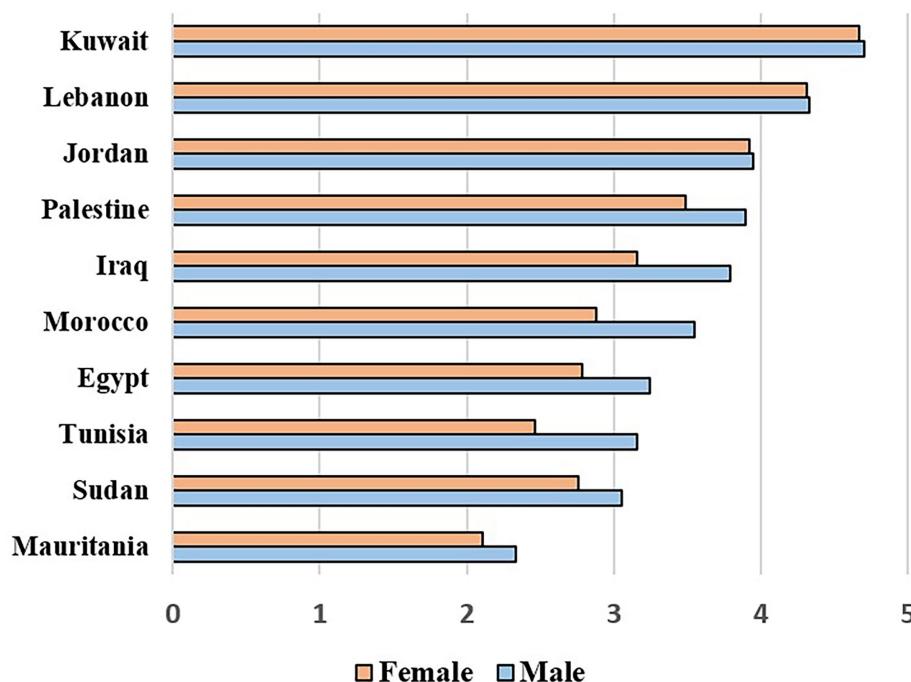


FIGURE 3

Internet use on a scale from 1 to 5 by gender. Source: The graph was produced by the authors using data from the Arab Opinion Index (AOI).

The relationship appears significant in only four countries: Sudan, Kuwait, Egypt, and Mauritania. Women in Kuwait record the highest logistic regression odds ratio (OR), indicating that women who use the internet more frequently (compared to rarely/no use) are 6.8 times more likely to engage in formal political participation. The impact of internet use on women in Kuwait is notably higher than its impact on men. In the other countries, the differences in internet use's effect between women and men are not as pronounced.

The purpose of social media use significantly impacts formal political participation in all compared Arab countries except Kuwait (Table 1). For women, the odds ratios are significant in eight countries, compared to six countries for men. The relationship between "the purpose of social media use" and "formal political participation" is significant in 11 cases for women and only seven for men. For women, in most cases (10 out of 11), the purpose of social media use is closely aligned with public affairs, including interacting with social and political issues and expressing opinions on current political events. For example, women in Morocco who express their opinions on current political events are 2.8 times more likely to engage in formal political participation.

For men, in four out of seven cases, the purpose of social media use is closely aligned with public affairs, such as interacting with political issues, obtaining news or political information, expressing opinions on current political events, or organizing political activities for a public cause or general issue. However, in three cases, men's use of social media does not show a clear focus on issues of public interest.

The type of social media used appears to influence formal political participation in six countries (Table 1), with significant relationships found for platforms such as Facebook, Twitter, Instagram, and Telegram. The highest odds ratio is observed in Egypt, where women who frequently use Facebook are 11 times more likely to engage in

formal political participation. For men, the highest odds ratio is found in Lebanon, where those who frequently use Instagram are three times more likely to participate formally in politics. When the regression models are controlled for socio-economic and demographic variables, the results indicate that certain statuses significantly influence formal political participation for both women and men in many Arab countries. Citizens with high or medium incomes, higher levels of education, are more likely to participate formally in politics. In a few cases, employment and housewife status are also shown to be significant.

4.4 The impact on informal political participation

Table 2 shows that internet use impacts informal political participation (such as signing a petition or protest letter, participating in a peaceful demonstration or sit-in, or joining an activist group working to lobby, support, or mobilize for a public or societal cause) across all Arab countries, except Morocco. Women record the highest logistic regression odds ratios, particularly in Egypt and Kuwait. For example, Egyptian women who use the internet more frequently (versus rarely or not at all) are 4.8 times more likely to engage in informal political participation. In some countries, like Jordan and Tunisia, the impact of internet use on informal political participation is significant only for men, while in Lebanon, this relationship is significant only for women.

The "purpose of social media use" affects informal political participation in all compared Arab countries. This relationship is significant in 20 cases for women and 20 cases for men. For both genders, in most instances, the purpose of social media use is closely

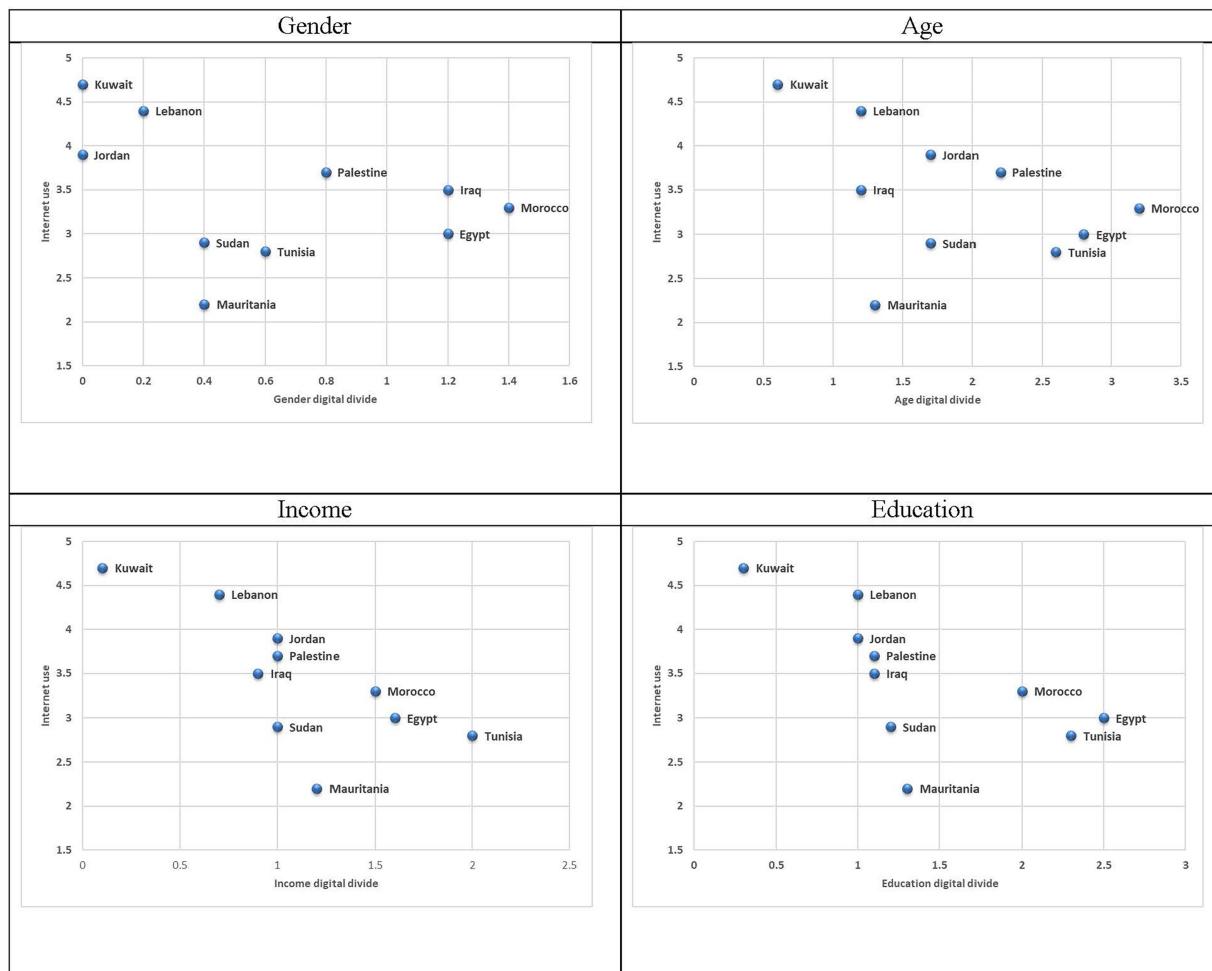


FIGURE 4

The scatter plots graph represents the distribution of countries according to the relationship between the level of Internet use (scale 0–5) and the level of the digital divide for gender, age, income, and education.

aligned with public affairs, such as interacting with social or political issues, obtaining news or political information, expressing opinions on current political events, or organizing political activities for public causes or general issues. Women consistently record the highest logistic regression odds ratios. For instance, women in Mauritania who use social media to “organize political activities for a public cause/general issue” are 7.5 times more likely to engage in informal political participation. Similarly, women in Jordan who use social media to “interact with a political issue” are 7.1 times more likely to participate in informal political activities. In contrast, men’s significant odds ratios are generally lower than those of women. This indicates that the “purpose of social media use” has a more pronounced impact on informal political participation among women compared to men. Only a few significant odds ratios are observed in cases where the purpose of social media use is not oriented toward public interest issues.

The type of social media used also influences informal political participation in all selected countries. In a first group of countries (including Jordan, Sudan, Iraq, and Kuwait) the odds ratios for the type of social media use are significant only for men.

In a second group of countries, the odds ratios are significant only for women (Tunisia and Mauritania). In a third group of countries, the odds ratios are significant for both women and men (Palestine, Lebanon, Egypt, and Morocco). The relationship is predominantly significant for platforms such as Twitter, Facebook, and Instagram. The highest odds ratio for women appears in Morocco, where women who frequently use Facebook are 5.2 times more likely to engage in informal political participation. For men, the highest odds ratio appears in Sudan, where men who frequently use Snapchat are 4.7 times more likely to participate informally in politics.

As the regression models control for socio-economic and demographic variables, the results show that various statuses influence informal political participation for both women and men in many Arab countries, except Jordan. In some countries, the impact of socio-economic and demographic factors is significant only for men or only for women, while in others, many of these variables are significant for both genders. The most significant variables include high income, medium income, higher education, employment status (employed, unemployed), and student status.

TABLE 1 Formal political participation: results of logistic regression stratified by gender.

	Jordan		Tunisia		Sudan		Iraq		Palestine	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Internet use					1.71** 1.04–2.77	2.03*** 1.24–3.31				
SM 1										
SM 2										
SM 3	2.07* 1.29–3.32									
SM 4										
SM 5	1.93* 1.10–3.37		2.17* 1.13–4.15						2.25*** 1.53–3.32	
SM 6						2.24** 1.27–3.93	1.69* 1.03–2.77			
SM 7										
SM 8				2.16*** 1.42–3.29	1.99** 1.22–3.24				2.31*** 1.54–4.08	
SM 9										2.61** 1.69–4.01
Facebook										
Twitter										
Snapchat										
Instagram										
Telegram							2.32** 1.31–4.11	1.88** 1.18–2.98	5.41* 1.20–24.36	
YouTube										
18–34										
35–54										
55+										
High income								1.90** 1.24–2.92		
Medium income										
Low income										
High education										2.41*** 1.60–3.65
Medium education										
Low education										
Single										
Married										
Divorced/ widowed										
Employed						1.62** 1.16–2.26				
Unemployed										
Housewife										
Student										

(Continued)

TABLE 1 (Continued)

	Kuwait		Lebanon		Egypt		Morocco		Mauritania		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
Internet use	6.79*** 4.14–11.02	2.92** 1.81–4.64			2.71*** 1.81–4.01	1.90*** 1.18–3.06			1.93** 1.18–3.15	2.22*** 1.36–3.63	
SM 1						3.27*** 1.92–5.57				2.21** 1.36–3.61	
SM 2											
SM 3											
SM 4				1.86* 1.15–3.03							
SM 5							2.02** 1.30–3.40				
SM 6									2.62* 1.10–6.23		
SM 7										2.29* 1.09–4.79	
SM 8			1.94*** 1.35–2.80				2.81** 1.85–3.97				
SM 9											
Facebook	1.52* 1.04–2.22	1.90** 1.18–3.07			10.75*** 3.02–38.23						
Twitter		1.71* 1.07–2.74	3.18*** 1.66–6.11							2.35* 1.13–4.90	
Snapchat				2.48* 1.21–5.08							
Instagram	1.90** 1.20–3.01			2.99*** 1.93–4.63	2.76*** 1.55–4.85						
Telegram											
YouTube	1.52* 1.02–2.27	1.77* 1.09–2.88									
18–34									1.73* 1.08–2.79		
35–54									1.77* 1.11–2.80		
55+											
High income		2.23** 1.02–2.27	2.69*** 1.57–4.60	1.81* 1.13–2.91	5.82*** 3.50–9.68	4.50*** 2.03–6.24		2.34*** 1.37–3.91	1.87** 1.18–2.95		
Medium income				1.75** 1.20–2.57		2.71*** 1.85–3.97	1.10–4.12	1.82** 1.10–3.02	1.91** 1.15–3.22	1.75** 1.21–2.54	1.45* 1.07–1.97
Low income											
High education			1.80** 1.18–2.75	1.63* 1.07–2.47		2.15** 1.32–3.52		2.10** 1.30–3.40		2.33** 1.31–4.13	
Medium education											
Low education											
Single											
Married											

(Continued)

TABLE 1 (Continued)

	Kuwait		Lebanon		Egypt		Morocco		Mauritania	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Divorced/ widowed										
Employed	2.20*** 1.48–3.27	1.87** 1.17–2.99					1.69* 1.15–2.49			
Unemployed	1.64* 1.07–2.54			2.25** 1.25–4.04						
Housewife										
Student										

Odd ratio with CI.

Source: The table was produced by the authors using data from the Arab Opinion Index (AOI). The numbers indicate odds ratios for determining the predictive power of determinants with an impact on political participation. SM1: To contact family and friends. SM2: To meet new people. SM3: To learn about social and cultural activities/events. SM4: To find out what people are talking about. SM5: To interact with a social issue. SM6: To interact with a political issue. SM7: To get news/political information. SM8: To express an opinion on current political events. SM9: To organize political activities for a public cause/general issue. Across the estimated logistic regression models, the Hosmer–Lemeshow goodness-of-fit statistics were non-significant ($p > 0.05$), indicating that the predicted probabilities align well with the observed outcomes and that the models provide an acceptable fit to the data. The Nagelkerke R^2 values ranged approximately from 0.06 to 0.28 across countries and gender groups, suggesting that while the included predictors contribute meaningfully to explaining variation in political participation, a large share of the behavioral outcome is also shaped by broader contextual, structural, and cultural factors not included in these models. Because pseudo R^2 values in logistic regression do not represent the proportion of variance explained, these values are interpreted cautiously and used primarily to compare models rather than to quantify explanatory power. Together, the non-significant Hosmer–Lemeshow tests and consistent pseudo R^2 values suggest that the models are statistically appropriate and substantively informative, even while political participation remains a complex and multi-dimensional phenomenon. *** $p < 0.001$, highly significant; ** $p < 0.01$, significant; * $p < 0.05$, marginally significant.

5 Discussion

The analysis of gender-based disparities in political engagement across Arab countries must be grounded in broader theoretical frameworks such as structuration theory and intersectionality, which help unpack how institutional structures and agency interact to shape women's access to political spaces. This study investigates key questions as mentioned above. It draws attention to the persistent gender gap in political participation across Arab countries, with distinct patterns between formal and informal involvement. Men are typically more engaged than women in informal political activities, and the gap is notably wider in these domains compared to formal political participation. In practical terms, informal engagement remains extremely limited among women (Jafari, 2022). Our results showed that just 5% of women in Jordan and 7% in Tunisia report taking part in actions such as signing petitions or joining peaceful protests. These findings provide empirical evidence addressing our first research question. These findings should not only be understood descriptively but also interpreted through the lens of structural inequality and digital opportunity. The broader literature on digital affordances underscores how socio-technical contexts can either empower or marginalize specific groups such as women in this case of Arab countries.

Although such forms of participation are often considered more accessible and adaptable avenues for civic expression, prevailing social norms and restrictive policies appear to discourage women from entering public spaces (Bargain et al., 2019). Here, the feminist media theory helps explain how access to digital platforms does not equate to equal participation when entrenched patriarchal norms shape online behaviors and visibility. While some advances toward gender equity have occurred, many Arab nations continue to enforce legal structures that constrain women's access to political influence and institutional power. These constraints often involve restrictions on mobility and require male guardian approval for decisions related to education, employment, and travel (Bunch, 2022). Together, these

societal and legal barriers hinder women from fully claiming their civic and political rights (Shalaby and Elimam, 2020). As of now, the Arab world remains the region with the lowest global rates of female political participation (UN Women Arab States, 2015), highlighting the pressing need for structural reforms to support women's engagement in both formal and informal political life.

The gender gap index, based on women's representation in Parliament, does not exceed 16% in Arab countries, placing these countries at the lowest level globally and far below the world average of 22.1% (UN Women Arab States, 2015). Studies conducted over the past decade point to the Arab Spring uprisings as a turning point in narrowing the gender gap across the region. In the years following these movements, Arab women have taken on visible roles in social activism, conflict resolution, and peacebuilding processes. A new feminist discourse has emerged, advocating for global and equal citizenship and emphasizing the importance of women as influential actors in the political sphere (Raïq and Roberts, 2022).

Several Arab countries have introduced new legislation to support women's political participation, such as increasing their representation in Parliament. However, some observers criticize this progress as being limited to "progressive" forms of political participation, primarily linked to civil society movements and issues like education, immigration, and the environment. In contrast, socio-cultural constraints continue to hinder gender equality in employment and education, thereby restricting women's participation in "traditional" politics, which is more oriented toward leadership and decision-making (Yassin and Hoppe, 2019). Arab women remain underrepresented in institutions such as political parties, the judiciary, and ministerial positions, further limiting their opportunities in other political arenas (UN Women Arab States, 2015).

Digital technologies and social media can play a significant role to encourage political activity with unrestricted communication and information exchange for women (Raïq and Roberts, 2022). These platforms allow women to create inclusive spaces for political discussion and mobilization in the democratic process, particularly

TABLE 2 Informal political participation: results of logistic regression stratified by gender.

	Jordan		Tunisia		Sudan		Iraq		Palestine	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Internet use		2.50** 1.48–4.21		3.01*** 1.37–6.57	1.51* 0.68–3.29	1.67** 0.78–3.72	1.71* 0.67–3.83	3.10*** 1.42–6.79	2.02*** 0.91–4.38	2.49*** 1.14–5.48
The purpose for social media use										
SM 1										
SM 2					2.61* 1.12–6.19			1.92* 1.30–2.90	3.67*** 1.82–7.46	
SM 3										
SM 4										2.21* 1.05–4.49
SM 5						2.11* 1.06–4.49			2.42* 1.02–5.73	
SM 6	7.11*** 2.66–21.41							2.21*** 1.56–3.22		2.18** 1.28–3.87
SM 7				1.78* 1.05–3.20	2.21* 1.16–4.21					
SM 8		2.89*** 1.60–5.32					2.43** 1.36–4.37			2.52** 1.39–4.57
SM 9			6.10*** 2.18–17.16	2.62*** 1.50–4.65	3.51*** 2.03–6.24	1.71* 1.04– 12.92	3.77*** 2.01–6.83		3.45*** 2.01–6.24	
The type of social media used										
Facebook		3.81* 1.20– 12.10								
Twitter								1.89* 1.15–3.22		
Snapchat			4.42* 1.03–18.58			4.71*** 1.85– 12.01				
Instagram		1.89* 1.01–3.50								
Telegram										
YouTube									2.62*** 1.54–4.35	1.51* 1.02–2.29
18–34										
35–54+										
55+										
High income				1.56* 1.08–2.66				1.91** 1.17–2.97		
Medium income								1.61* 1.03–2.39		
Low income										
High education			4.22*** 1.82–10.18							2.43*** 1.62–3.69
Medium education										2.02** 1.26–3.09
Low education										

(Continued)

TABLE 2 (Continued)

	Jordan		Tunisia		Sudan		Iraq		Palestine	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Single				2.62* 1.25–5.31						1.81** 1.24–2.74
Married										
Divorced/ widowed										
Employed			7.91*** 2.39–26.20			2.21** 1.36–3.61				
Unemployed			4.12* 1.05–15.48			2.82** 1.73–4.60				
Housewife										
Student			5.51** 2.09–52.45	2.32* 1.01–5.16						
	Kuwait		Lebanon		Egypt		Morocco		Mauritania	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Internet use	4.69** 2.15–10.29	2.60* 1.19–5.69	3.51** 1.60–7.67		4.80*** 2.19–10.51	3.01*** 1.37–6.57			1.71** 0.78–3.72	2.11*** 0.96–4.60
The purpose for social media use										
SM 1										
SM 2										
SM 3	4.01* 1.21–3.04									4.99** 1.65–5.08
SM 4										
SM 5					4.13** 1.50–1.39					
SM 6	2.61** 1.44–4.72									
SM 7				2.61** 1.33–3.43					2.81* 1.86–4.18	
SM 8		2.31*** 1.55–4.07		2.11* 1.33–3.43			4.46*** 2.47–8.03	2.12*** 1.40–3.36		4.02** 1.46–7.02
SM 9	3.82*** 2.45–5.77	2.41*** 1.17–4.69	4.11*** 2.52–7.00		4.41*** 1.98–9.84	3.4*** 2.32–4.86	5.03*** 2.54–9.76	2.6*** 1.63–4.07	7.5*** 3.25–16.70	2.1* 1.02–4.44
Facebook		1.71** 1.78–3.96					5.22*** 2.30–11.80	2.52* 1.20–5.29		
Twitter			3.51*** 1.91–6.47	1.67* 1.01–3.00	3.0*** 1.64–5.38	1.56* 1.06–2.54	4.11*** 1.91–8.96			
Snapchat				1.89* 1.08–3.37						
Instagram				2.10 (1.15– 3.82)**					3.53* 1.12–11.20	
Telegram		2.72*** 1.78–3.96								
YouTube			1.91* 1.04–3.66			2.22*** 1.38–3.60				
18–34									1.64* 1.09–2.21	

(Continued)

TABLE 2 (Continued)

	Kuwait		Lebanon		Egypt		Morocco		Mauritania	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
35–54+			2.78*** 1.59–5.09				1.91* 1.14–3.20			
55+										
High income	2.33** 1.37–3.91								2.81*** 1.07–7.53	2.62* 1.56–4.22
Medium income					2.1** 1.27–3.32	2.1*** 1.51–3.03				1.71* 1.09–2.60
Low income										
High education		1.61* 1.13–2.48			1.92* 1.04–3.36				3.03*** 1.44–6.34	
Medium education										1.92** 1.24–2.98
Low education										
Single			2.2** 1.23–3.88							
Married										
Divorced/widowed										
Employed	5.11** 2.57–10.09	3.22** 1.24–5.15						2.11*** 1.41–3.23		
Unemployed	6.41*** 3.23–12.67	4.32*** 1.52–6.68			2.81** 1.44–5.57			1.82* 1.10–3.02		
Housewife										
Student	3.61* 1.36–9.46	4.82** 1.22–8.05			4.01** 1.65–9.84					

Odd ratio with CI.

Source: The table was produced by the authors using data from the Arab Opinion Index (AOI). The numbers indicate odds ratios for determining the predictive power of determinants with an impact on political participation. SM1: To contact family and friends. SM2: To meet new people. SM3: To learn about social and cultural activities/events. SM4: To find out what people are talking about. SM5: To interact with a social issue. SM6: To interact with a political issue. SM7: To get news/political information. SM8: To express an opinion on current political events. SM9: To organize political activities for a public cause/general issue. Across the estimated logistic regression models, the Hosmer–Lemeshow goodness-of-fit statistics were non-significant ($p > 0.05$), indicating that the predicted probabilities align well with the observed outcomes and that the models provide an acceptable fit to the data. The Nagelkerke R^2 values ranged approximately from 0.06 to 0.28 across countries and gender groups, suggesting that while the included predictors contribute meaningfully to explaining variation in political participation, a large share of the behavioral outcome is also shaped by broader contextual, structural, and cultural factors not included in these models. Because pseudo R^2 values in logistic regression do not represent the proportion of variance explained, these values are interpreted cautiously and used primarily to compare models rather than to quantify explanatory power. Together, the non-significant Hosmer–Lemeshow tests and consistent pseudo R^2 values suggest that the models are statistically appropriate and substantively informative, even while political participation remains a complex and multi-dimensional phenomenon. *** $p < 0.001$, highly significant; ** $p < 0.01$, significant; * $p < 0.05$, marginally significant.

for women who often face barriers to traditional political participation (Gil de Zúñiga et al., 2012). The finding that internet use is more effective for informal rather than formal participation is consistent with theories of networked activism, which emphasize how social media afford flexible, low-cost forms of mobilization. Unlike voting or party affiliation, which are constrained by institutional rules, informal channels such as online petitions or demonstrations benefit from the civic affordances of digital platforms (speed, anonymity, and horizontal communication). These affordances make digital tools particularly valuable for women in restrictive political systems, where informal civic action is often more feasible than formal political engagement. Nevertheless, there still exists a pronounced digital divide that disadvantages women across much of the Arab world. A woman in the Middle East and North Africa is 9% less likely to own a mobile phone and 21% less likely to use the mobile internet compared to men due to cultural, economic, and societal barriers (Rowntree,

2018; Mottaghi, 2019; Ali et al., 2021). This gap in terms of access to digital technologies adds to existing gender inequalities, which in turn further limit women's use of online platforms for political participation and empowerment.

Regarding our second research question, our research shows that socio-economic and demographic factors account for important variations in the digital divide across Arab countries. Some nations, such as Kuwait, benefit more from advancements in communication technology, while poorer countries face economic constraints that worsen the gender digital divide. In underserved regions, the high cost of internet services and devices places a heavy burden on low-income households, further limiting access. The scatter plots (Figure 4) illustrate how determinants such as gender, income, education, and age contribute to the digital divide in some countries. While these factors are presented separately, it is essential to consider their cumulative impact, which can weigh heavily on women's ability to

express their citizenship through political participation (Elena-Bucea et al., 2021; Seabrook and Aiston, 2012). For instance, an elderly woman in a rural area with low income and low education level faces significantly more barriers than a young, educated woman in an urban environment within a wealthy country. Women from higher socio-economic backgrounds are more likely to engage in political activities, indicating that economic resources and education are key enablers of political engagement (Hong and Kim, 2021). Here, an intersectional lens is essential. Gender inequalities overlap with class, education, and geography to create layered disadvantages. For example, urban, educated women are significantly more likely to access and use social media for civic action than rural, low-income women, who face cumulative barriers. Intersectionality, therefore, clarifies why digital exclusion is most acute at the intersection of multiple vulnerabilities (gender, poverty, low education, and rural residence).

This intersectionality highlights the importance of targeted interventions that address not only gender disparities but also broader socio-economic status (SES) barriers. These findings contribute to addressing the third research question: How do internet access and purposes of social media use influence Arab women's participation in both formal and informal political activities? Regardless of the rapid development of social media such as Facebook, Twitter, Instagram, etc., we have many countries that seem not fully benefiting from the technological revolution in the manner required to use the internet as a tool for promoting political participation. This gap reflects the broader literature on digital citizenship, which argues that inclusion depends not just on connectivity but also on the ability to use digital resources for meaningful civic purposes. The question is to what extent the diffusion of information and communication technologies can contribute to increasing Internet penetration and providing more opportunities for political participation to citizens (Donati, 2023; Dossou et al., 2024).

Furthermore, these patterns resonate with the notion of "civic opportunity structures" in constrained political systems. In such contexts, informal digital engagement may serve as an alternative public sphere where marginalized voices (especially women) can express dissent or mobilize around specific issues without the risks associated with formal political opposition. Hence, our findings illustrate not only gender disparities but also the political functionality of digital platforms under the political Arab regimes.

Socio-economic factors play an important role in the political participation for both men and women, such as income level, education level, or employment status. In some countries, our results show that young people may be more favorable to political participation than older ones. However, this generational dynamic should not be interpreted purely as a demographic trend, it reflects a broader shift in how younger citizens engage with politics in hybrid regimes where traditional institutions are often unresponsive.

When it comes to the relation between internet use and the political participation, it appears that the impact is stronger in informal political participation (regression model with more powerful predictors) than formal political participation in all Arab countries and for both women and men. This differential effect reflects the affordances of digital platforms, informal participation often involves low-barrier, horizontal actions such as sharing content, signing petitions, or engaging in online discussions, which digital tools are well-suited to facilitate. Formal participation, by contrast, remains tied

to institutional access points such as elections or official meetings, which are often structurally exclusive.

It appears that there is an unbalanced power of internet use depending on the type of formal or informal political engagement. This observation aligns with the concept of civic affordances, which suggests that digital technologies tend to favor informal, loosely structured modes of participation due to their greater flexibility compared to institutionalized political channels. Regarding the impact of social medias (the purpose of use and the type of social media used), it appears that this applies to a large number of countries and to a greater number of variables when it comes to informal participation for both men and women. This pattern reinforces insights from networked activism theory, which posits that social media serves as a vehicle for mobilizing informal political actions, especially in contexts where traditional participation is limited or discouraged. It is also an unbalanced power of social media depending on the type of political engagement. These findings reflect the differential affordances of platforms like Facebook, X (Twitter), or WhatsApp, which facilitate expressive, grassroots civic action more than they do institutionalized or electoral participation. However, in today's digital society, citizens have access to vast amounts of information about political and social life, fostering hopes that this will enhance political participation. Yet, some studies argue that true participation involves action, whereas activities such as watching TV or YouTube, visiting websites, or merely expressing an interest in politics do not constitute actual involvement (van Deth, 2014). This raises questions about the authenticity of voluntary citizen participation, and the level of freedom people can experience in the political sphere, particularly under the influence of official institutions dominating network systems. Digital citizenship demands that governments ensure citizens have free access to knowledge and the ability to form independent convictions regarding political and social issues communicated via the internet, especially in developing countries (Castells, 2010).

Furthermore, the results of the logistic regression have shown that when citizens use the internet for specific purposes, it can shift power toward greater political participation. The real impact on political participation comes from the purpose of internet use, particularly when it is directed toward politics and issues of public interest. Intentional use of technology for civic engagement supports mediated political engagement theory, which highlights the significance of political efficacy and motivation in digital contexts.

The gender digital divide seems to disappear when it comes to the way and the purpose of using the internet and its impact on political participation. Even if the informal political participation rate is lower than the formal political participation rate, the use of internet is more effective on informal participation for both women and men in Arab countries. The results show the same trend for the use of social media. Women do not appear to be less disadvantaged in comparison with men when analyzing the impacts of internet use and social media on political participation. This suggests a partial erosion of structural gender barriers in digital civic spaces, especially where formal mechanisms remain gender exclusive. Are we moving toward a rebalancing of powers when technological tools are equally available to both men and women? Are we moving toward a rebalancing of powers when it comes to informal political participation?

To address these questions, a multidimensional approach is required. Further research is needed to analyze the extent to which policies will truly prioritize digital literacy and expand access to technology, particularly for women in disadvantaged regions. Training initiatives and resources can empower women to effectively utilize digital platforms for political engagement. Simultaneously, legal and cultural barriers that restrict women's freedoms must be dismantled. Advocacy for reforms that promote gender equality and protect women's rights is essential in creating an inclusive environment conducive to political participation (Kaur and Verma, 2016). Here, applying the lens of intersectionality, particularly the overlap of gender with socio-economic and demographic disadvantages, provides a deeper understanding of who benefits most (or least) from digital participation opportunities. Moreover, social media serves as a powerful tool for mobilization and advocacy, amplifying women's voices and facilitating their involvement in the political sphere. However, women-led campaigns focusing on environmental issues, education reform, and community development are becoming more influential, demonstrating the transformative potential of these platforms. However, the effectiveness of these tools relies on digital literacy and access to essential skills, which remain unequally distributed due to socio-economic disparities (Gil de Zúñiga et al., 2012; van Deursen and van Dijk, 2019). Even in Arab countries that have made some progress toward equality of opportunities in the digital world, women remain among the most vulnerable groups in terms of political participation opportunities.

The digital divide is an important issue to address in Arab countries. It can have a major impact on the political participation of women and enable them to become active to lead changes. This could include access to many digital platforms that offer the possibility to participate in public debates and engage with decision-makers (Edwards, 2003). The issue arises in terms of not only equal access to technology, but also access to the training and skills needed to benefit from digital tools for political engagement (van Deursen and van Dijk, 2019). This suggests that the digital divide should be considered not only in terms of the number of people connected, but also as a significant indicator for understanding its impact on social integration (van Deursen and van Dijk, 2019), particularly through political participation.

The 2030 Agenda for Sustainable Development Goals (SDGs) and the Beijing Declaration and Platform for Action emphasize the importance of women's equal political engagement at all levels of governance. Research indicates that the presence of women in decision-making roles greatly helps in redefining local priorities. Women bring a unique perspective to governance by promoting diversity, prioritizing family-friendly policies, and advocating for gender equality in areas such as maternity leave, income, and employment (Schwab et al., 2017). This is why we need to understand how new technology can serve as a tool for political participation, especially for women.

6 Conclusion

The digital divide is a multi-dimensional issue that requires further studies from a multidisciplinary perspective. Arab countries

must work to reduce the gender gap and enable women to express their citizenship through both formal and informal political participation. Achieving this also depends on access to technology and the development of digital skills. The nature and significance of participation vary depending on whether the engagement is formal or informal.

Although the gender digital divide poses considerable challenges, our study finds that when women gain access to the internet and social media, they often benefit as much as (or even more than) men from these platforms. The divide appears to narrow when focusing on the ways and purposes behind internet use, especially in the context of online political engagement. For Arab women, internet and social media platforms exert a particularly strong influence on informal political participation. In this regard, the impact of these technologies is significantly greater on informal engagement than on formal participation.

The analysis suggests that women are not necessarily more disadvantaged than men, they simply need to be freed from certain constraints and need more spaces and opportunities to assert their abilities to mobilize politically. Despite some progress following the Arab Spring, the region has yet to make a meaningful jump toward establishing democratic spaces that guarantee political rights, particularly for women.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found here: <https://arabindex.dohainstitute.org/EN/Pages/Arab-Opinion-Index-2019-2020.aspx>. Further inquiries can be directed to the corresponding author.

Ethics statement

Ethical approval was not required for the study involving humans in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was not required from the participants or the participants' legal guardians/next of kin in accordance with the national legislation and the institutional requirements.

Author contributions

HR: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. SR: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. AA-M: Conceptualization, Project administration, Supervision, Validation, Writing – original draft, Writing – review & editing. AM: Conceptualization, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. A-SA: Conceptualization, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. MT: Conceptualization, Investigation, Writing – original draft, Writing – review & editing.

FA-F: Funding acquisition, Investigation, Writing – original draft, Writing – review & editing. RA-M: Funding acquisition, Investigation, Writing – review & editing, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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