“Fintech and financial inclusion of Moroccan women working in the informal sector: An empirical analysis based on the Technology Acceptance Theory”

AUTHORS	Amina Ait Hbibi Samir Makhrout

ARTICLE INFO	Amina Ait Hbibi and Samir Makhrout (2025). Fintech and financial inclusion of Moroccan women working in the informal sector: An empirical analysis based on the Technology Acceptance Theory. *Investment Management and Financial Innovations*, *22*(3), 439-454. doi:10.21511/imfi.22(3).2025.33
DOI	http://dx.doi.org/10.21511/imfi.22(3).2025.33
RELEASED ON	Monday, 22 September 2025
RECEIVED ON	Thursday, 17 April 2025
ACCEPTED ON	Thursday, 07 August 2025

JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
48	4	2

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Amina Ait Hbibi (Morocco), **Samir Makhrout** (Morocco)

FINTECH AND FINANCIAL INCLUSION OF MOROCCAN WOMEN WORKING IN THE INFORMAL SECTOR: AN EMPIRICAL ANALYSIS BASED ON THE TECHNOLOGY ACCEPTANCE THEORY

Type of the article: Research Article

Received on: 17th of April, 2025
Accepted on: 7th of August, 2025
Published on: 22nd of September, 2025

Amina Ait Hbibi, Professor, Economics Department, Cadi Ayyad University Marrakesh, Morocco. (Corresponding author)

Samir Makhrout, Ph.D., Economics Department, Cadi Ayyad University Marrakesh, Morocco.

Abstract

This paper examines the potential impact of financial technology (Fintech)on the financial inclusion of women working in the informal sector in Morocco, a population largely excluded from formal financial systems despite the rapid expansion of digital financial services.

The study aims to identify the key factors that influence the adoption of Fintech solutions among these women, using the Technology Acceptance Model (TAM) as the theoretical framework. Specific variables analyzed include perceived usefulness, ease of use, cost reduction, transaction security, and language accessibility.

The study is based on primary data collected through a structured survey conducted between March and May 2024. The sample consists of 315 Moroccan women engaged in informal sectors, including local trade, handicrafts, and agriculture. The women come from both rural and urban areas. An ordered Probit model is employed to test eight hypotheses concerning the adoption of Fintech.

Results show that simple user interfaces, lower costs, and perceived security significantly increase the likelihood of Fintech adoption. Conversely, variables such as greater access to financial services or awareness-raising initiatives have a limited impact. Control variables such as level of education and social influence also reveal significant effects, while access to digital infrastructure shows a more moderate influence. The results underline that Fintech can contribute to the financial inclusion of women in the informal sector, provided that solutions are simple, affordable, and culturally appropriate. The study recommends the development of Fintech tools adapted to the sociocultural and technological contexts of this vulnerable group.

Keywords Fintech, financial inclusion, informal sector, Moroccan women, technology adoption

JEL Classification G21, O16, O33, J16, R20

INTRODUCTION

Fintech, as a technological innovation in the financial sector, plays an increasingly important role in financial inclusion by addressing the needs of populations excluded from traditional banking services. In many developing countries, including Morocco, women working in the informal sector represent a particularly vulnerable group, facing combined economic, social, and technological barriers. These women, who actively contribute to the economy through various activities such as trade, crafts, or services, often face difficulties in accessing formal financial services, which are essential for the development and sustainability of their activities. The lack of access to these services

Conflict of interest statement:
Author(s) reported no conflict of interest

limits their ability to save, invest, or secure their income, thereby reinforcing their economic exclusion and hindering their entrepreneurial potential. In response to these challenges, Fintech offers an innovative solution by lowering barriers related to gender, location, or income through tools accessible via mobile phones or basic technologies. By offering services such as digital payments, microloans, or simplified money transfer mechanisms, Fintech has the potential to significantly improve the economic situation of women in the informal sector.

However, for these solutions to be widely adopted, several conditions must be met. The effectiveness of these technologies depends on factors such as ease of use, affordability, availability in local languages, and perceived security. These elements directly influence the willingness of potential users to adopt such tools, especially in contexts marked by low education levels and limited digital literacy. Moreover, the adoption of Fintech is not limited to purely technological or economic considerations. Social norms, cultural pressures, and the availability of digital infrastructure play a decisive role in how these technologies are perceived and used. In the case of women working in the informal sector in Morocco, it is important to analyze these dynamics to identify levers that can maximize the positive impact of Fintech. This paper, therefore, seeks to explore the individual, social, and structural factors influencing the adoption of Fintech technologies, with the aim of providing concrete pathways to promote sustainable and equitable financial inclusion.

In this context, the study proposes to examine the determinants of Fintech adoption among women working in the informal sector in Morocco. By applying the Technology Acceptance Model (TAM), it relies on an empirical model based on an ordered Probit approach, tested using data collected from 315 women from various informal sub-sectors such as local trade, handicrafts, and agriculture. The goal is to identify the drivers and barriers to Fintech adoption within this specific population, in order to contribute to the formulation of public policies and inclusive technological solutions.

This study is distinguished by its empirical focus on a relatively underexplored female informal population in the Moroccan context, and by the use of a well-established theoretical framework to analyze the mechanisms of technological acceptance. The results will help shed light on the conditions under which Fintech can effectively play a structuring role in the financial inclusion of women in situations of economic vulnerability.

1. LITERATURE REVIEW

Fintech is considered a key lever for poverty reduction, women's empowerment, and economic development. However, in developing countries, women remain structurally disadvantaged in terms of access to formal financial services due to economic, cultural, and technological factors (Sahay et al., 2015). Similarly, Arner et al. (2016) acknowledge that Fintech offers innovative alternatives to traditional financial services, particularly for unbanked populations. It can thus significantly contribute to financial inclusion in developing countries through tools such as mobile banking and alternative credit services. Ghosh and Vinod (2017) observe progress in financial inclusion since the G20 initiatives, while emphasizing that gender gaps in access to banking services persist. Their analysis of the specific challenges faced by women in the informal economy, highlights limited access to credit and insurance thereby perpetuating structural inequalities. This dynamic is further explored by Kede Ndouna and Zogning (2022), who explain that restricted access to formal financial services exacerbates income inequalities between men and women. Their study highlights the difficulties related to collateral requirements and intermediation costs, despite women often turning to informal services. Furthermore, Kaur and Kapuria (2020) highlight that female heads of household have less access to institutional financing, partly due to low levels of education and social disparities. Siwela and Njaya (2021) examine the challenges women face in accessing digital financial services, highlighting barriers such as limited access to cell phones, af-

http://dx.doi.org/10.21511/imfi.22(3).2025.33

fordable data, and financial education. They point out that digital tools can reduce these disparities. Tripathi and Rajeev (2023) emphasize the impact of digital financial services in reducing gender inequalities, particularly among women working in the informal sector. Their gender-based financial inclusion index shows that education, economic participation, and access to digital infrastructure play a central role in empowerment. Demirgüç-Kunt and Klapper (2012) argue that formal financial tools such as savings accounts and microloans can empower marginalized women, strengthening their economic role within communities.

Technology Acceptance Theory (TAT), developed by Davis (1989), is a theoretical model for explaining and predicting technology adoption based on user perceptions. This model is particularly relevant for analyzing the adoption of Fintechby women in the informal sector, focusing on two fundamental factors: perceived usefulness and perceived ease of use. Perceived Usefulness (PU) refers to the degree to which a person believes that using a technology will improve their performance in a specific context. In the context of Fintech and women informal workers, this perception translates into several benefits. Female informal workers may perceive Fintech as an effective way to access financial services, such as microloans, secure their savings, or receive digital payments. The use of these technologies can also save considerable time, reducing the need to visit banks or resort to informal financial systems. Moreover, the costs associated with digital transactions are often perceived as lower than those of traditional systems or informal intermediaries, which is another economic advantage. In addition, Fintech facilitates transactions, thanks to fast and accessible tools for sending and receiving payments, thus meeting the specific needs of informal entrepreneurs and merchants.

Perceived Ease of Use (PEOU) is another key element of TAM. It is defined as the degree to which a person believes that using a technology will not require significant effort. In the context of Fintech, this dimension takes on particular importance for female informal workers. User interfaces for Fintech applications need to be simple, visually intuitive, and suitable for people with low literacy or limited digital skills. Accessibility via cell phones, whether smartphones or basic phones, is also a lever for encouraging adoption in segments where access to the Internet or advanced technologies remains limited. Additionally, applications should be offered in local languages to ensure greater understanding and inclusiveness. Finally, training and awareness-raising initiatives play a crucial role in explaining how to use these technologies, thereby reducing apprehensions associated with their perceived complexity. These two interconnected dimensions form the basis of the analysis of technology adoption in this particular context. Mafuwane and Muchie (2022) focus on barriers to the adoption of electronic payments by small merchants, identifying a lack of infrastructure and high costs as key obstacles. Women in the informal sector, particularly those involved in street trading, face specific challenges, such as distrust of digital systems and low proficiency in Fintech tools.

Shithii et al. (2024) show that the perceived usefulness of Fintech services plays a decisive role in their adoption, especially in contexts where financial inclusion is limited. Tubastuvi and Purwidianti (2023) confirm that the adoption of Fintech services by women improves their financial inclusion and the performance of the SMEs they run, by reducing financial barriers through ease of use and perceived usefulness. Tripathi and Rajeev (2023) delve deeper into the effects of digital financial inclusion, showing that perceived usefulness is key to accessing financial resources and enhancing entrepreneurial participation. Gupta and Kiran (2024) study gender disparities in India, highlighting that social and economic constraints limit women's adoption of digital technologies. However, when perceived usefulness is positive, these technologies are adopted even in unfavorable contexts. Batola (2019) demonstrates the interplay between perceived usefulness, ease of use, and social influence in the adoption of Fintech solutions. He advocates awareness campaigns to encourage the use of these tools, particularly among women in the informal economy. Ozili (2023) examines how accessibility and financial development promote the adoption of Fintech solutions, enhancing their usefulness for historically excluded groups. Masood et al. (2023) highlight the role of perceived usefulness as a mediator of intention to adopt digital financial services. They highlight government support and perceived risk management as key factors influencing these behaviors.

Al-Smadi (2023) examines the role of mobile apps and online platforms in making transactions more accessible, with a particular focus on women in the informal sector. Lutfi et al. (2021) confirm the significant impact of perceived usefulness on behavioral intention to adopt mobile payments, demonstrating that this factor remains crucial for integrating Fintech solutions in various contexts.

Davis (1989) points out that the perception of ease of use acts as a decisive lever in technological adoption. A favorable perception in this area is a greater incentive to use an innovation, even if the study does not specifically target women in the informal sector. From a complementary perspective, Arendse and Van den Berg (2024) emphasize the importance of designing simple digital interfaces that encourage adoption among informal entrepreneurs, particularly those with limited technological experience. This simplicity, particularly relevant for marginalized populations, aligns with the findings of Saima et al. (2022), who demonstrate that ease of use promotes gender-independent Fintech adoption, encompassing women operating in the informal sector. Nguyen and Malik (2022) explore gender disparities in technology adoption, highlighting increased anxiety among women about using technology. These disparities are explained by a lower perception of their digital skills. Consequently, reinforcing the perception of ease of use for these women could improve their use of digital tools, particularly in informal settings. Nguyen et al. (2021) complement this thinking by pointing out that innovations such as agent-based banking and mobile financial services simplify access to financial services, thereby reducing the costs associated with physical infrastructure. For their part, Malik et al. (2021) emphasize the role of a reliable digital infrastructure and targeted educational programs to include historically excluded groups, amplifying trust in formal services and encouraging their use. Pandey et al. (2022) emphasize the benefits of digitalization in enhancing financial inclusion in rural or underserved areas. They note that Fintech technologies reduce transaction costs and increase accessibility for marginalized groups such as women in the informal sector.

Allen et al. (2014) share this perspective, explaining that the establishment of sound legal frameworks and reliable dispute resolution mechanisms supports financial inclusion, reinforcing the impact of digital tools. These findings align with those of Lawal et al. (2023), who note that the high costs of traditional transactions are a significant barrier to inclusion. In contrast, Fintech solutions lower these barriers, thereby facilitating access to financial services. Adong and Lwanga (2017) confirm that digital technologies broaden access to financial services by reducing access costs for marginalized populations, particularly women in rural areas. Philippon (2016) reinforces this idea by emphasizing that Fintech innovations democratize access to services, making them accessible to previously excluded populations. Similarly, Bachas et al (2018) explain that digitization not only reduces transaction costs but also travel constraints, thereby increasing the accessibility of financial services. These findings are supported by Rhyne (2001), who shows that lower costs through digital tools overcome the traditional barriers of formal banking systems. Furthermore, Aker et al. (2016) note that mobile banking plays a key role in improving access to financial services for marginalized groups, while warning of the limitations associated with gender inequalities. Beck and De La Torre (2007) explain that technological innovations in finance enable providers to offer services at competitive rates. This reduction in costs promotes financial inclusion by meeting the needs of rural areas and low-income households. These dynamics demonstrate the impact of Fintech solutions on improving financial accessibility in different contexts, taking into account the economic and social realities of disadvantaged groups.

Ait Hbibi et al. (2021) indicate that interface simplicity plays a major role in the adoption of Fintech services, emphasizing how ease of use can remove significant barriers for informal sector users. Koefer et al. (2024) reinforce this idea by showing that intuitive digital solutions reduce fears about using digital platforms, particularly among those with little experience with technology. Grohmann et al. (2018) demonstrate that the compatibility of digital tools with common devices, such as cell phones, improves financial inclusion. Raj and Upadhyay (2020) note that these simple interfaces, when accessed via mobile devices, reduce barriers for populations that are far removed from conventional banking infrastructures. Coffie et al. (2021) emphasize the combined effect of the simplicity of digital platforms and awareness-raising initiatives in increasing the adoption of Fintech by women, particularly in informal sectors. They argue that these technologies, made accessible

http://dx.doi.org/10.21511/imfi.22(3).2025.33

via cell phones, serve to bypass technical barriers and integrate marginalized groups. Nguimkeu and Okou (2021) highlight the importance of mobile applications and simple digital solutions in giving informal workers and small businesses access to digital markets. Agarwal and Assenova (2024) concur with this perspective, highlighting the effectiveness of interfaces based on USSD technology, which enable use even for users of unconnected phones, while extending services via local agent networks.

Ebirim and Odonkor (2024) demonstrate that Fintech's adaptability to local contexts, particularly through language support, facilitates financial inclusion. Mengistu (2022) agrees, asserting that these linguistic adaptations remove barriers for the unbanked. Haridh (2022) also stresses the importance of removing barriers linked to linguistic diversity in regions where several local languages coexist. These authors agree on the impact of linguistic personalization in improving the adoption of financial technologies, especially in multicultural environments. Badruddin (2017) emphasizes the combination of technological integration and educational programs to develop an understanding of digital tools. This position is shared by Danladi et al. (2023), who point out that targeted training campaigns increase the intention to adopt Fintech, particularly among women in the informal sector. Latifah et al. (2023) complement these arguments by emphasizing the role of hands-on workshops and awareness campaigns in developing digital skills and reducing adoption barriers. Pandey et al. (2022) confirm that training plays a key role in eliminating structural barriers, thus promoting broader financial inclusion.

Lim et al. (2019) demonstrate that perceived security indirectly influences the continued adoption of Fintech by increasing the perceived usefulness of digital platforms. Nguyen et al. (2021) extend this thinking by explaining that the combination of perceived security and user satisfaction builds trust and supports sustainable adoption. Bajunaied et al. (2023) point out that perceived safety reduces concerns about digital risks, encouraging repeat use. Zhang et al. (2023) stress the importance of transparent and robust security infrastructures to consolidate the trust of Fintech users, an essential condition for broadening adoption and promoting financial inclusion. Based on the various elements cited in the literature review and applying the Technology Acceptance Theory (TAT) developed by Davis (1989), the following research hypotheses can be constructed:

H1: Perceived usefulness of Fintech has a positive impact on informal women's intention to adopt it.

H2: Perceived ease of use of Fintech has a positive impact on informal women's intention to adopt it.

H3: Improved access to financial services via Fintech has a positive impact on informal women's intention to adopt it.

H4: Reducing the cost of digital transactions via Fintech has a positive impact on informal women's intention to adopt it.

H5: The simplicity of interfaces and their compatibility with cell phones have a positive impact on informal women's intention to adopt them.

H6: The availability of Fintech applications in local languages has a positive impact on informal women's intention to adopt them.

H7: Fintech training and awareness initiatives have a positive impact on informal women's intention to adopt Fintech.

H8: The perceived security of Fintech transactions has a positive impact on informal women's intention to adopt Fintech.

2. METHODS

2.1. Model and data source

This study adopts a quantitative approach aimed at evaluating the factors influencing the adoption of Fintech solutions by women working in the informal sector in Morocco. The sample for this study consists of 315 Moroccan women working in the informal sector. The study is based on primary data collected through a structured survey conducted between March and May 2024, specifically designed for this study. Participants were se-

lected to reflect a diversity of socioeconomic profiles, ensuring that the main characteristics of this sector in Morocco are adequately represented. The women come from both rural and urban areas, thereby capturing disparities in access to technological and financial infrastructures as well as specificities related to geographical contexts. The participants are engaged in various activities typical of the informal sector, including local trade, handicrafts, services such as informal catering, and informal agriculture. These fields reflect the primary sources of income for women in this sector while highlighting the diversity of informal activities in Morocco.In terms of sociodemographic profile, the majority of participants are in the 25-45 age group, which is representative of active women in the informal sector. Regarding education level, over 60% of the women have a primary education level or below, reflecting the challenges related to literacy and access to education for this population. This characteristic is significant as it directly affects their ability to adopt and use digital tools such as Fintech.

The model used in this study is based on the theoretical framework of the Technology Acceptance Model (TAM) to explain the adoption of Fintech by women in the informal sector. The Technology Acceptance Model, developed by Davis (1989), analyzes individual factors influencing technological adoption, particularly the perceived usefulness and ease of use. The mathematical formalization of the model is given by the following equation:

$$\begin{aligned} IAFT &= \beta_0 + \beta_1 \cdot PUSE + \beta_2 \cdot EASE \\ &+ \beta_3 \cdot ACCE + \beta_4 \cdot COST + \beta_5 \cdot SIMP \\ &+ \beta_6 \cdot LANG + \beta_7 \cdot SENS + \beta_8 \cdot SECU \\ &+ \delta_1 \cdot EDUC + \delta_2 \cdot SOCL + \delta_3 \cdot INFR + \varepsilon. \end{aligned} \quad (1)$$

The intention to adopt Fintech (IAFT) is measured on a Likert scale ranging from 1 to 5. Variables related to perception, such as perceived usefulness (PUSE), perceived ease of use (EASE), transaction cost reduction (COST), interface simplicity (SIMP), social influence (SOCL), and technological infrastructure (INFR), are each evaluated through five items, scored on a Likert scale from 1 to 5, where the average of the responses is calculated to represent each concept synthetically. Improvement in access to financial services (ACCE) and perceived transaction security (SECU) use Likert scales ranging from 1 to 5 to capture the participants' overall perception. The availability of applications in local languages (Arabic) (LANG) and awareness and training initiatives (SENS) are coded as binary variables (1 or 0), indicating the presence or absence of these features, respectively. Education level (EDUC) is quantified in years of schooling.

2.2. Why use Ordered Probit?

The use of the ordered Probit model in this study is justified by the ordinal nature of the dependent variable, representing the degree of readiness for entrepreneurship. This model is suitable for variables with an implicit order of levels, allowing the estimation of the probability of each level of entrepreneurial engagement. In this context, variables such as social pressures (NORM) and access to resources (RESO) act as institutional factors likely to influence the different levels of entrepreneurial engagement. Similarly, social role theory highlights the impact of cultural expectations on female behaviors, particularly domestic roles (TRAD) and mobility restrictions (MOBI), thereby justifying the use of an ordered model to capture the effects of these barriers on entrepreneurial engagement. Finally, the inclusion of control variables such as age, education level, and marital status provides a better understanding of the influence of individual characteristics on the level of engagement.

3. RESULTS

3.1. Robustness analysis

The use of recursive coefficient testing in an ordered Probit model is justified by its ability to evaluate coefficient stability in nonlinear contexts. Unlike the Ramsey test, designed for linear models, recursive coefficients check the consistency of estimates as observations are progressively added. This is essential in ordered Probit models, where the relationships between variables and categories follow a cumulative distribution. While the Ramsey test is effective for detecting specification errors in linear models, it is less suited for ordered Probit models due to their nonlinear structure. Recursive coefficients, on the other hand, allow the identification of breaks in estimates and ensure the robustness of the results.

http://dx.doi.org/10.21511/imfi.22(3).2025.33

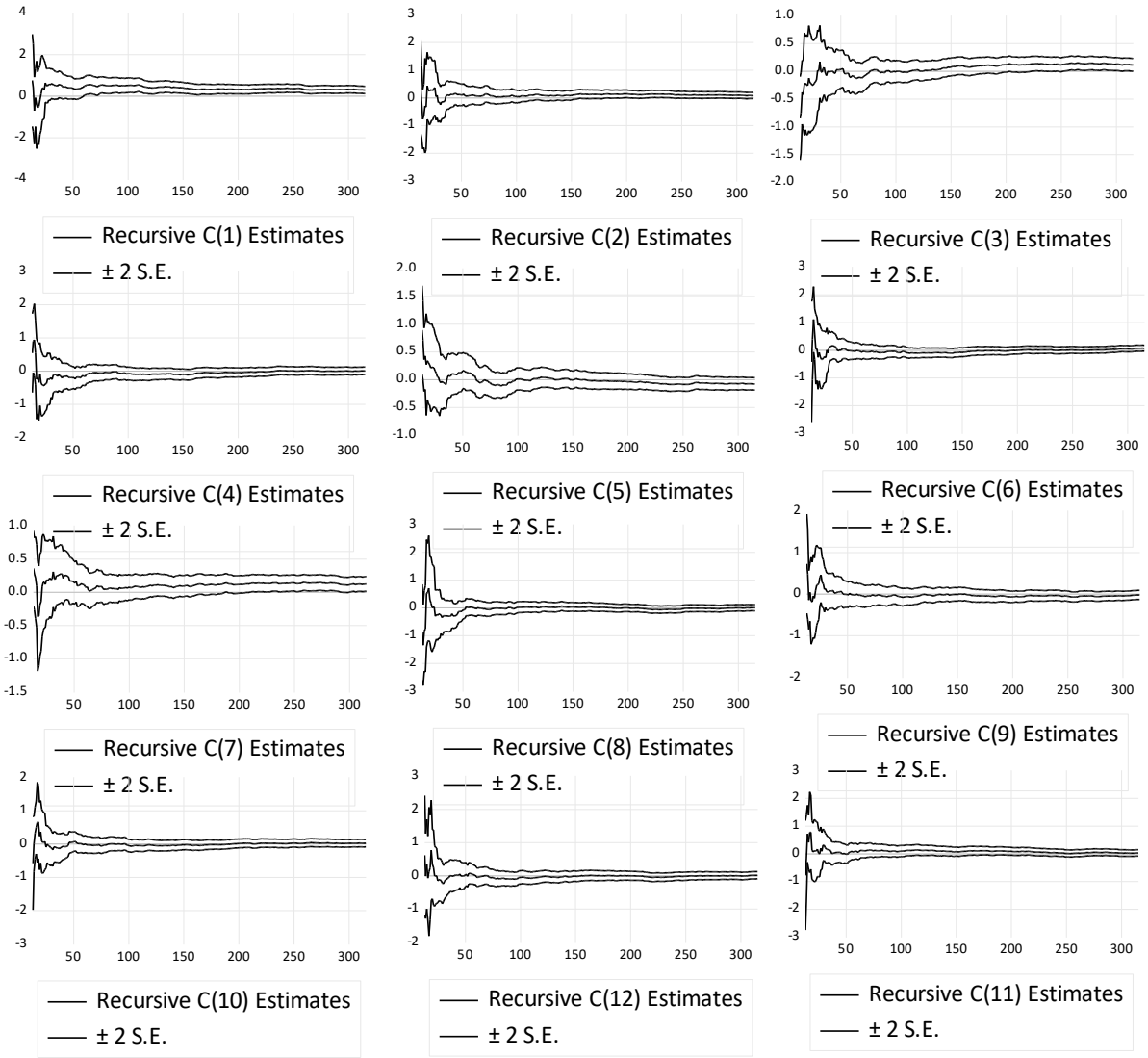

Figure 1. Specification testing: recursive coefficients

Figure 1 shows the recursive coefficient estimates (C1 to C12) of the model, accompanied by confidence intervals at ±2.5 standard deviations. After initial fluctuations, the coefficients converge to stable values, indicating good model specification. This stability demonstrates that the relationships between the explanatory variables and the dependent variable remain consistent across the sample, reinforcing the validity of the ordered Probit model.

The use of confidence ellipses is justified in the ordered Probit model to evaluate collinearity among explanatory variables. They provide a graphical visualization of correlations and coefficient stability while better accommodating the nonlinear specifics of the model. Unlike VIF, which quantifies multicollinearity in a linear framework, confidence ellipses offer a more suitable analysis for detecting problematic correlations in a nonlinear model, such as an ordered Probit model.

Figure 2 presents the confidence ellipses. Each ellipse represents the relationship between two explanatory coefficients, with a circular or elongated shape indicating the degree of collinearity. The closer the ellipses are to a perfect circle, the lower the correlation between the variables. Conversely, elongated ellipses indicate significant correlation, suggesting potential problematic collinearity. The results in the figure show that the relationships between the coefficients are represented by ellipses close to a circle, suggesting low collinearity in the model. This confirms that the explanatory

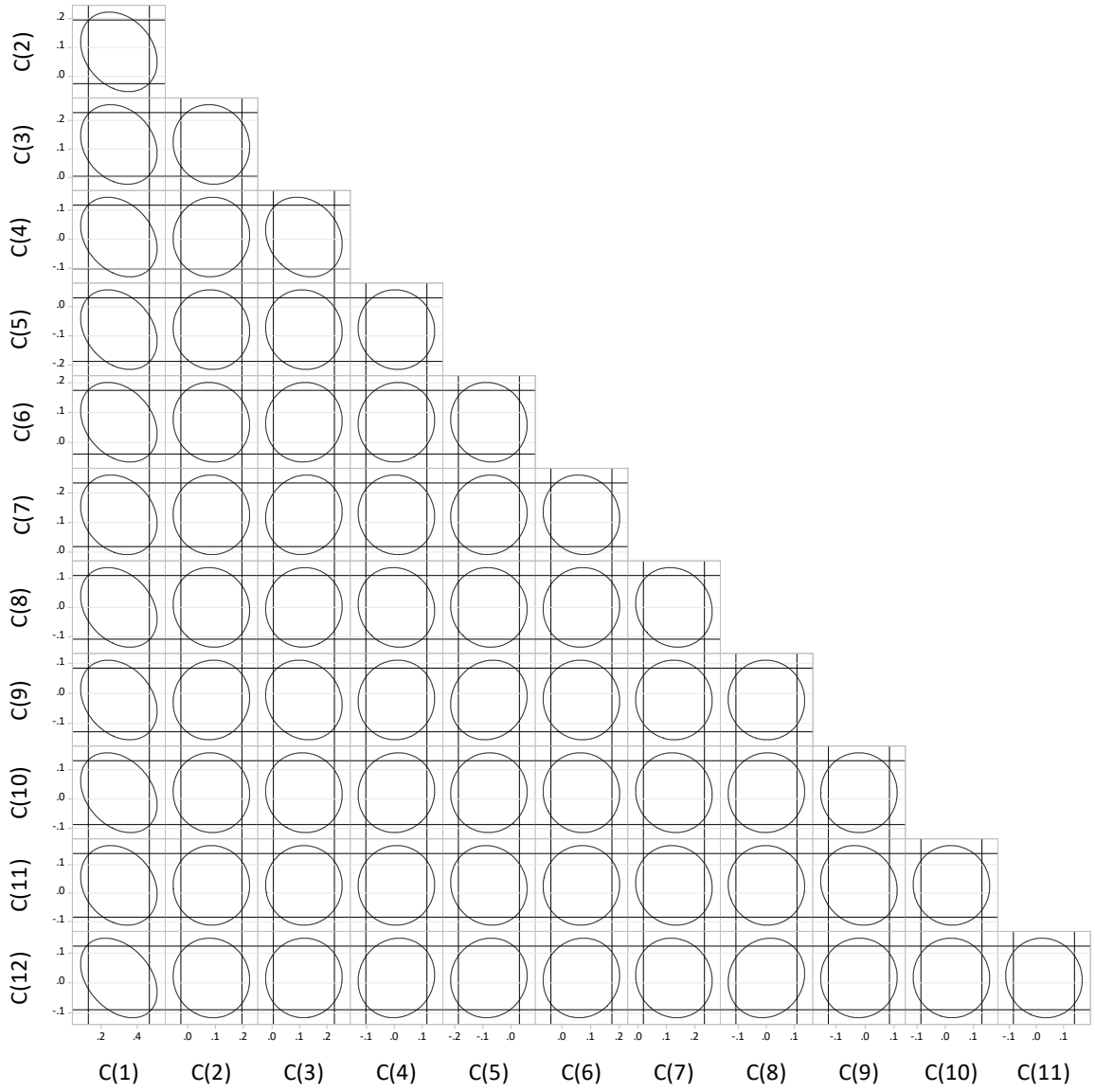

Figure 2. Collinearity analysis based on confidence ellipses

variables are well differentiated and contribute independently to the estimates, thereby reinforcing the good specification of the model. However, slightly elongated ellipses between certain coefficients (e.g., between C(4) and C(5)) may indicate moderate correlations. Overall, there is no strong concern regarding collinearity in the model.

The White Test is favored in the context of an ordered Probit model due to its ability to detect general forms of heteroscedasticity, unlike other tests such as Breusch-Pagan or Goldfeld-Quandt, which rely on specific assumptions. The White Test does not require presupposing the structure of heteroscedasticity, making it particularly suitable for nonlinear models like the ordered Probit, where interactions and nonlinearities among explanatory variables are frequent. Additionally, unlike more restrictive tests, the White Test analyzes the dependence of error variance on predictors, including their quadratic and interactive combinations. This flexibility allows the identification of forms of heteroscedasticity often invisible with other methods.

Table 1 presents the results of the White Test for heteroscedasticity in the model. The three main indicators (F-statistic, ObsR-squared, and Scaled

http://dx.doi.org/10.21511/imfi.22(3).2025.33

Explained SS) show associated probability values (p-values) all greater than 0.05, indicating that the null hypothesis of homoscedasticity cannot be rejected. The F-statistic (0.9845) and its p-value (0.5207) suggest that the model's errors do not have variance systematically linked to the explanatory variables or their interactions. The ObsR-squared indicator (76.3437) and its p-value (0.4997), based on a Chi-squared test, confirm this conclusion. Finally, the Scaled Explained SS, with a p-value of 1.0000, further reinforces the absence of evidence of heteroscedasticity in the data. These results indicate that the variance of the errors is constant, validating the assumption of homoscedasticity for the ordered Probit model.

Table 1. White test: Heteroskedasticity test

Test	Value	Probability
F-statistic	0.984596	Prob. F(77,237): 0.5207
Obs*R-squared	76.34371	Prob. Chi-Square(77): 0.4997
Scaled explained SS	37.64654	Prob. Chi-Square(77): 1.0000

In an ordered Probit model, the normality of residuals is not an essential condition for the validity of estimates. Unlike classical linear models (such as OLS regression), where the normality of errors is a key assumption to ensure valid statistical tests, Probit models primarily rely on the assumption that the latent variable follows a standard normal distribution. However, analyzing the residual distribution can be useful for detecting potential model specification issues (e.g., omitted variables or poorly modeled interactions). If significant deviations from normality are detected, this could indicate that adjustments or robustness tests are needed to enhance the reliability of the results.

Figure 3 shows the residual distribution of the model along with the results of the Jarque-Bera normality test. The histogram indicates that the residuals are generally symmetric, with a mean close to zero (2.36e-17) and low skewness (Skewness = 0.0736). The kurtosis (2.6659) is close to 3, indicating a distribution similar to a standard normal distribution. The Jarque-Bera test yields a statistic of 1.7497 with an associated probability of 0.4169. The p-value, being well above 0.05, does not allow rejecting the null hypothesis of residual normality. This indicates that the residuals follow a distribution consistent with the normality assumption. Although residual normality is not a critical assumption for model validity, a residual distribution close to normal reinforces the reliability of the estimates. It also suggests that the model is well specified and that there are no major issues with the residuals, such as systematic errors or omitted variables.

DFFITS measures the change in fitted predictions when each observation is removed from the model, making it a powerful tool for assessing the sensitivity of results to specific observa-

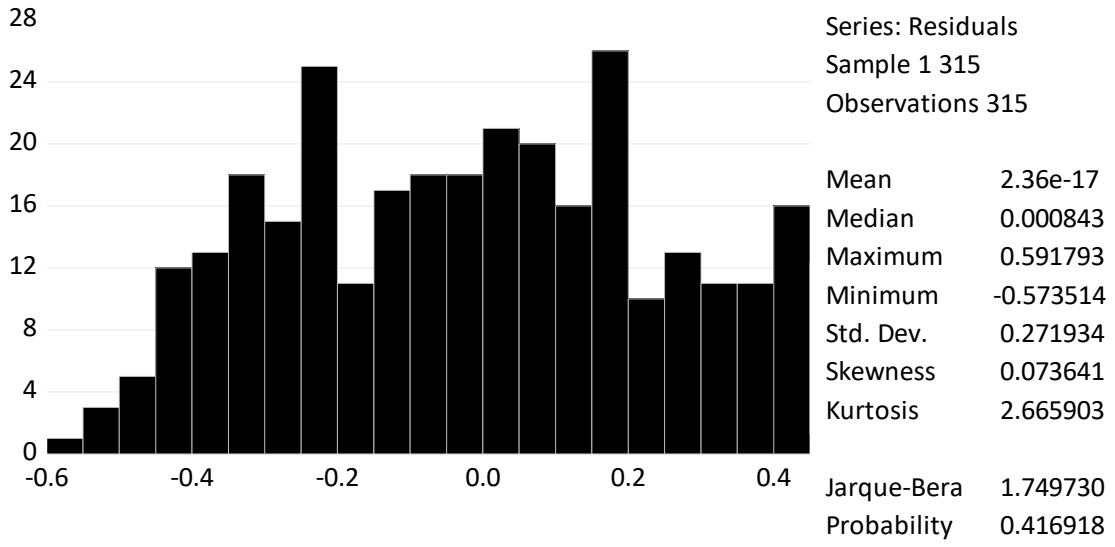

Figure 3. Jarque-Bera normality test

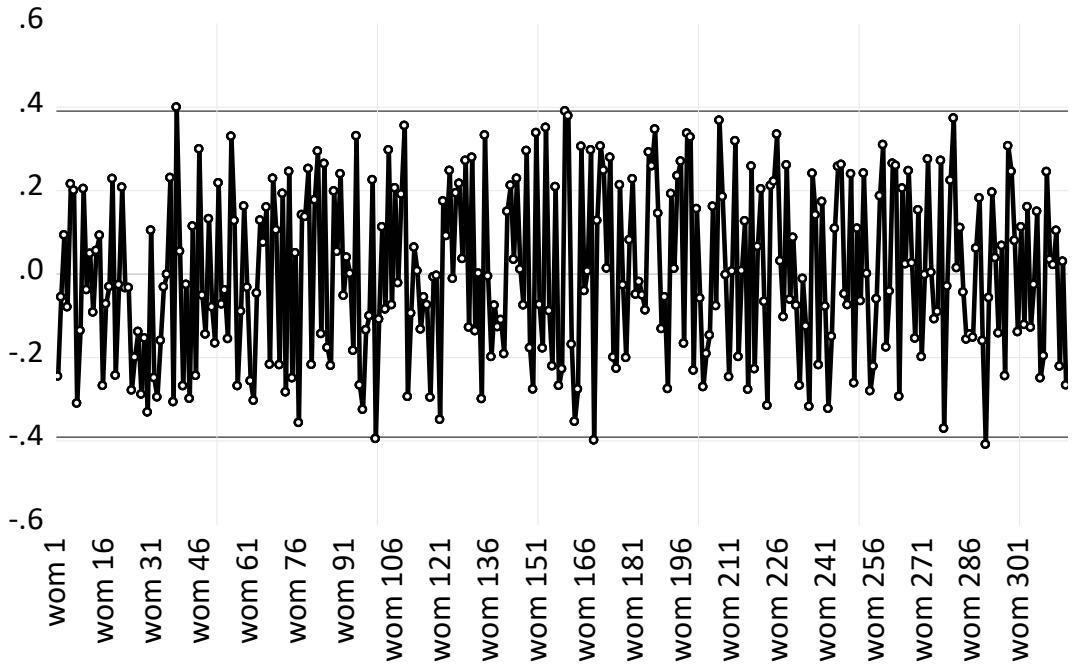

Figure 4. DFFITS: Model stability testing

tions. Unlike other diagnostics, such as studentized residuals, which focus more on coefficient stability or detecting anomalies in residuals, DFFITS provides a direct measure of the influence of individual points on model predictions. This is particularly relevant in an ordered Probit model, where ordinal data and nonlinear relationships can amplify the effect of certain extreme or outlier observations.

Figure 4 illustrates the DFFITS values for each observation in the model. Each value indicates the impact of an observation on the model's adjusted predictions when it is removed. In this figure, most DFFITS values appear to cluster around zero, suggesting that the majority of observations have no significant effect on the model's predictions. No values seem to exceed the commonly used critical thresholds ($\pm 2\sqrt{(k/n)}$, where k is the number of model parameters and n is the number of observations), indicating the absence of highly influential observations.

These results confirm the overall stability of the model, as no specific observation dominates the coefficient estimates or compromises the validity of the predictions. This also reinforces the robustness of the ordered Probit model and the reliability of the conclusions drawn from the analysis.

3.2. Ordered Probit model result

The empirical approach adopted in this study, conducted with a sample of 315 Moroccan women working in the informal sector, aims to explore the potential of financial inclusion through Fintech. Based on Davis's Technology Acceptance Theory (1989), an ordered Probit model was used to analyze the intention to adopt Fintech. This model captures the cumulative nature of the relationships between financial inclusion and individual, social, and institutional factors, such as perceived usefulness, ease of use, and available infrastructure. Statistical tests, including recursive coefficients, confidence ellipses, the White Test, and DFFITS, used to analyze the influence of individual observations, were employed to evaluate the robustness and specification of the model, ensuring the validity of the estimates. The results of the ordered Probit model are presented in Table 2.

Perceived usefulness (PUSE) shows a positive coefficient and is significant at the 5% level, confirming hypothesis *H1*. This indicates that perceived usefulness has a positive effect on the intention of

http://dx.doi.org/10.21511/imfi.22(3).2025.33

Table 2. Results of the ordered Probit model

Dependent Variable: IAFT
Method: ML – Ordered Probit(Newton-Raphson / Marquardt steps)
Sample: 1 315
Included observations: 315
Number of ordered indicator values: 5
Convergence achieved after 4 iterations
Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	30.688033	7.776851	3.946074	***0.0001
PUSE	4.634253	1.925158	2.407206	**0.0167
EASE	10.313099	3.850745	2.678209	***0.0078
ACCE	–1.701046	3.553636	–0.478678	0.6325
COST	4.982814	2.448702	2.034880	**0.0427
SIMP	10.945422	3.781276	2.894637	***0.0041
LANG	9.357513	3.903975	2.396919	**0.0171
SENS	–0.478568	0.718403	–0.666154	0.5058
SECU	9.965030	4.029284	2.473152	**0.0139
EDUC	5.140698	2.153331	2.387323	**0.0176
SOCL	–12.975675	4.924885	–2.634716	***0.0088
INFR	2.607249	2.189828	1.190618	0.2347

Note: *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

women working in the informal sector to adopt Fintechtechnologies. Perceived ease of use (EASE) exhibits a positive coefficient and is significant at the 1% level, validating hypothesis *H2*. These results demonstrate that the easier Fintechtools are perceived to use, the more likely they are to be adopted by these women. Improvement in access to financial services (ACCE) reveals a negative and non-significant coefficient, leading to the rejection of hypothesis *H3*. This result suggests that expanded access to financial services does not appear to be a determining factor in the decision to adopt Fintech.

Regarding the reduction of digital transaction costs (COST), the analysis shows a positive coefficient significant at the 5% level. This supports hypothesis *H4*, highlighting that cost reduction is a key factor in encouraging the adoption of Fintech technologies. Simplicity of interfaces (SIMP) shows a positive coefficient and is significant at the 1% level, thus corroborating hypothesis *H5*. This result emphasizes that simple and intuitive interfaces promote the use of Fintechtools by women in the informal sector. The availability of applications in Arabic (LANG) has a positive coefficient and is significant at the 5% level, validating hypothesis *H6*. This illustrates the role of linguistic adaptations in encouraging the adoption of these technologies. Conversely, training and awareness initiatives (SENS) display a negative and non-significant coefficient, leading to the rejection of hypothesis *H7*. This indicates that such initiatives do not appear to have a notable influence on the intention of women in the informal sector to adopt Fintech.

Perceived transaction security (SECU) is associated with a positive coefficient and is significant at the 5% level, confirming hypothesis *H8*. This demonstrates that perceived security of transactions is a lever for encouraging the adoption of Fintech. Regarding control variables, education level (EDUC) shows a positive coefficient and is significant at the 5% level, indicating that higher education levels promote the intention to adopt. However, social influence (SOCL) is associated with a negative coefficient and is significant at the 1% level, reflecting a negative effect on the adoption of Fintechtechnologies. Finally, digital infrastructure (INFR) does not show significance, suggesting it has no notable impact on the decision to adopt Fintech.

4. DISCUSSION

The perceived usefulness of Fintech emerges as a key driver for its adoption. By offering practical solutions such as simplified access to microcredits, secure savings, and facilitated digital payments, Fintech addresses the specific needs of these wom-

en, who are often excluded from traditional financial services. These observations reinforce the findings of Shithii et al. (2024), who demonstrated that Fintech tailored to the economic realities of informal workers promotes their integration into the formal financial system. The simplicity of using Fintech technologies is also important to maximizing their inclusive impact. As highlighted by Ait Hbibi et al. (2021) and Arendse and Van den Berg (2024), intuitive and accessible interfaces designed for users with limited digital skills are essential. For women in the informal sector, often facing barriers such as limited literacy or poor access to technology, simple mobile applications and visual tools are decisive factors in encouraging adoption. This implies that developers should prioritize solutions that reduce perceived complexity, offering clear and easy-to-navigate options.

Improving access to financial services through Fintech must go beyond the mere availability of tools. Ndouna and Zogning (2022) show that access alone is insufficient; users seek services that provide real added value, such as microcredits tailored to irregular incomes or payment options compatible with their daily needs. Efforts to promote financial inclusion via Fintech should, therefore, focus on increasing service personalization to make them more relevant and attractive. Reducing the cost of digital transactions is another key factor motivating the use of Fintech, especially for low-income populations. Bachas et al. (2018) and Lawal et al. (2023) confirm that the fees associated with traditional financial systems are often prohibitive for women in the informal sector. By offering low-cost digital services and raising awareness among informal workers about these solutions, Fintech can overcome one of the main barriers to financial inclusion.The availability of applications in Arabic is an important facilitating factor in ensuring the adoption of Fintech technologies. These findings align with the conclusions of Mengistu (2022) and Ebirim and Odonkor (2024), who emphasize the importance of adapting interfaces to cultural and linguistic contexts to reach marginalized groups. In Morocco, culturally adapted and translated applications would enhance accessibility for women in the informal sector, boosting their confidence and willingness to adopt these tools.

Training and awareness initiatives also need to be rethought to be more effective. While their importance has been demonstrated in other studies, their impact remains limited when they do not account for the specific realities of informal sector women. Danladi et al. (2023) point out that interactive formats, such as community workshops or practical tutorials, could better engage these users and encourage them to adopt financial technologies. Moreover, the perception of transaction security is an important factor in building user trust, as noted by Zhang et al. (2023) and Nguyen et al. (2021). Concerns about digital risks can be addressed through robust infrastructures and awareness campaigns focused on data protection. In Morocco, ensuring advanced security systems and promoting their transparency is essential to fostering sustainable adoption of financial technologies.Overall, Fintech represents a powerful solution for financially including women in the informal sector, provided it meets their specific needs. Developers, policymakers, and financial institutions must collaborate to design simple, accessible, relevant, and secure services while investing in targeted awareness and training campaigns tailored to this vulnerable group of women.

CONCLUSION

This study aimed to examine the determinants of Fintech adoption among 315 Moroccan women working in the informal sector, including local trade, handicrafts, and agriculture. This scientific contribution is based on original data that enrich the existing literature on Fintech and financial inclusion. The Technology Acceptance Model (TAM) served as the conceptual framework, and an ordered Probit model was employed to assess the influence of key factors, including perceived usefulness, ease of use, cost reduction, and perceived security, on the intention to adopt financial technologies.

The findings reveal that perceived usefulness, ease of use, cost reduction, and transaction security significantly influence the intention to adopt Fintech solutions. Additionally, contextual variables such as

http://dx.doi.org/10.21511/imfi.22(3).2025.33

educational level and prevailing social norms also play a substantial role, highlighting the specific challenges these women encounter in their daily environments.

These results contribute to the financial inclusion literature by offering a contextualized analysis of a vulnerable and under-researched population in developing countries. They underscore the importance of designing Fintech tools that are not only technologically effective but also culturally appropriate, linguistically accessible, and socially acceptable.

From this perspective, the promotion of Fintech must be accompanied by tailored support mechanisms, including targeted training programs, community-based awareness campaigns, and user-friendly multilingual interfaces. Strengthening digital infrastructure is also essential to overcome structural barriers that hinder large-scale adoption. By integrating these dimensions into public policies and private strategies, Fintech can become a powerful driver of financial inclusion, economic development, and women's empowerment in the informal sector.

Finally, future research could enhance this approach by employing qualitative or longitudinal methods to better understand the evolution of adoption behaviors and the long-term socio-economic impacts of Fintech within informal economies.

AUTHOR CONTRIBUTIONS

Conceptualization: Amina Ait Hbibi, Samir Makhrout.
Data curation: Amina Ait Hbibi, Samir Makhrout.
Formal Analysis: Amina Ait Hbibi, Samir Makhrout.
Funding acquisition: Amina Ait Hbibi, Samir Makhrout.
Investigation: Amina Ait Hbibi, Samir Makhrout.
Methodology: Amina Ait Hbibi, Samir Makhrout.
Project administration: Amina Ait Hbibi, Samir Makhrout.
Resources: Amina Ait Hbibi, Samir Makhrout.
Software: Amina Ait Hbibi, Samir Makhrout.
Supervision: Amina Ait Hbibi, Samir Makhrout.
Validation: Amina Ait Hbibi, Samir Makhrout.
Visualization: Amina Ait Hbibi, Samir Makhrout.
Writing – original draft: Amina Ait Hbibi, Samir Makhrout.
Writing – review & editing: Amina Ait Hbibi, Samir Makhrout.

REFERENCES

1. Adong, A., & Lwanga, M. M. (2017). Facilitating financial inclusion through promoting the use of mobile money as a saving avenue. *Economic Policy Research Centre.* Retrieved from https://policy-commons.net/artifacts/1446325/facilitating-financial-inclusion-through-promoting-the-use-of-mobile-money-as-a-saving-avenue/2078090/
2. Agarwal, A., & Assenova, V. A. (2024). Mobile money as a stepping stone to financial inclusion: How digital multisided platforms fill institutional voids. *Organization Science, 35*(3), 769-787.https://doi.org/10.1287/orsc.2022.16562
3. Ait Hbibi, A., Makhrout, S., Choukar, E., & El Hamidi, N. (2021). Financial inclusion of the informal sector through Fintech: what perspective does the Diffusion of Innovation offer? *International Journal of Information Technology and Applied Sciences (IJITAS), 3*(4), 184-190. Retrieved from https://woas-journals.com/index.php/ijitas/article/view/886/589
4. Aker, J. C., Boumnijel, R., McClelland, A., & Tierney, N. (2016). Payment mechanisms and anti-poverty programs: Evidence from a mobile money cash transfer experiment in Niger. *Economic Development and Cultural Change, 65*(1), 1-37. Retrieved fromhttps://ideas.repec.org/a/ucp/ecdecc/doi10.1086-687578.html
5. Allen, F., Carletti, E., Cull, R., Qian, J. Q., Senbet, L., & Valenzuela, P. (2014). The African financial development and financial inclusion gaps. *Journal of African Econo-*

mies, 23(5), 614-642. Retrieved fromhttps://ideas.repec.org/a/oup/jafrec/v23y2014i5p614-642..html

6. Al-Smadi, M. O. (2023). Examining the relationship between digital finance and financial inclusion: Evidence from MENA countries. *Borsa Istanbul Review, 23*(2), 464-472. Retrieved from https://www.sciencedirect.com/science/article/pii/S2214845022001181?ref=pdf_download&fr=RR-2&rr=982f90493f0bb084

7. Arendse, E., & van den Berg, C. (2024). Exploring the barriers to digital financial inclusion amongst businesses in the informal sector. *IST-Africa 2024 Conference Proceedings*. Retrieved from https://www.researchgate.net/publication/380978962_Exploring_the_Barriers_to_Digital_Financial_Inclusion_amongst_Businesses_in_the_Informal_Sector

8. Arner, D.W., Barberis, J. N., & Buckley, R. P. (2016). The evolution of Fintech: A new post-crisis paradigm? *Georgetown Journal of International Law, 47*(4), 1271-1319.Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2676553

9. Bachas, P., Gertler, P., Higgins, S., & Seira, E. (2018). Digital Financial Services Go a Long Way: Transaction Costs and Financial Inclusion. *AEA Papers and Proceedings, 108,* 444-448. Retrieved from https://seankhiggins.com/assets/pdf/BachasGertlerHiggins-Seira_DigitalFinancialServices.pdf

10. Badruddin, A. (2017). Conceptualization of the effectiveness of Fintech in financial inclusion. *International Journal of Engineering Technology Science and Research, 4*(7), 960-965. Retrieved from https://www.researchgate.net/profile/Aisha-Badruddin/publication/323475007_Conceptualization_of_the_Effectiveness_of_Fintech_in_Financial_Inclusion/links/5aa3ec21a6fdccd544ba1007/Conceptualization-of-the-Effectiveness-of-Fintech-in-Financial-Inclusion.pdf

11. Bajunaied, K., Hussin, N., & Kamarudin, S. (2023). Behavioral intention to adopt Fintech services: An extension of unified theory of acceptance and use of technology. *Journal of Open Innovation: Technology, Market, and Complexity, 9*(1), 100010. Retrieved from https://www.sciencedirect.com/science/article/pii/S2199853123001129?ref=pdf_download&fr=RR-2&rr=982f92f47e84d2ba

12. Batola, M. (2019). Factors determining the Fintech Adoption among Women: An Empirical Investigation. *Mathematical Statistician and Engineering Applications, 68*(1), 237-243. Retrieved from https://www.researchgate.net/publication/371047596_Factors_determining_the_FinTech_Adoption_among_Women_An_Empirical_Investigation

13. Beck, T., & De La Torre, A. (2007). The basic analytics of access to financial services. *Financial Markets, Institutions &Instruments, 16*(2), 79-117.https://doi.org/10.1111/j.1468-0416.2007.00120.x

14. Coffie, C. P. K., Hongjiang, Z., Mensah, I. A., Kiconco, R., & Simon, A. E. O. (2021). Determinants of Fintech payment services diffusion by SMEs in Sub-Saharan Africa: evidence from Ghana. *Information Technology for Development, 27*(3), 539-560.https://doi.org/10.1080/02681102.2020.1840324

15. Danladi, S., Prasad, M. S. V., Modibbo, U. M., Ahmadi, S. A., & Ghasemi, P. (2023). Attaining sustainable development goals through financial inclusion: exploring collaborative approaches to Fintech adoption in developing economies. *Sustainability, 15*(17), 13039.https://doi.org/10.3390/su151713039

16. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. Retrieved from https://www.jstor.org/stable/249008?origin=crossref

17. Demirgüç-Kunt, A., & Klapper, L. F. (2012). *Financial inclusion in Africa: an overview* (World Bank policy research working paper, 6088). Retrieved from https://openknowledge.worldbank.org/server/api/core/bitstreams/8221ad51-dbb7-5f77-a6d0-0c258eec5354/content

18. Ebirim, G. U., & Odonkor, B. (2024). Enhancing global economic inclusion with Fintech innovations and accessibility. *Finance & Accounting Research Journal, 6*(4), 648-673.https://doi.org/10.51594/farj.v6i4.1067

19. Ghosh, S., & Vinod, D. (2017). What constrains financial inclusion for women? Evidence from Indian micro data. *World development, 92,* 60-81. https://doi.org/10.1016/j.worlddev.2016.11.011

20. Grohmann, A., Klühs, T., & Menkhoff, L. (2018). Does financial literacy improve financial inclusion? Cross country evidence. *World Development, 111,* 84-96. https://doi.org/10.1016/j.worlddev.2018.06.020

21. Gupta, M., & Kiran, R. (2024). Reflection of Gender Digital Divide on Digital Financial Inclusion in Context of Indian Bankers: An Empirical Analysis. *SAGE Open, 14*(4), 21582440241288980.https://doi.org/10.1177/21582440241288980

22. Haridh, I. (2022). Language Barriers as a Limitation to Achieving Financial Inclusion Through Fintech in India. *Journal of Student Research, 11*(4).https://doi.org/10.47611/jsrhs.v11i4.3198

23. Kaur, S., & Kapuria, C. (2020). Determinants of financial inclusion in rural India: does gender matter? *International Journal of Social Economics, 47*(6), 747-767.Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4518818

24. Kede Ndouna, F., & Zogning, F. (2022). Financial inclusion and gender income inequalities in informal entrepreneurship: The case of Cameroon. *The Journal of Entrepreneurial Finance, 24*(3), 33-47. https://doi.org/10.57229/2373-1761.1443

25. Koefer, F., Bokkens, A., Preziuso, M., & Ehrenhard, M. (2024). *Addressing financial and digital literacy challenges for inclusive finance: Insights from microfinance institutions and Fintech organizations*

http://dx.doi.org/10.21511/imfi.22(3).2025.33

(EIF Working Paper No. 2024/97). Retrieved from https://ideas.repec.org/p/zbw/eifwps/283601.html

26. Latifah, F. N., Ariyanti, N., Fauji, I., & Tiswanah, N. (2023). Sosialization Fintech Literacy Peer to Peer Lending Syariah as Sidoarjo MSME Capital. *Indonesian Journal of Cultural and Community Development, 14*(2).https://doi.org/10.21070/ijccd.v14i2.955

27. Lawal, A. T., Olubiyi, T. O., & Bello, F. (2023). Financial inclusion and rural entrepreneurship: Demand-side review of Central Bank of Nigeria programmes for small and medium-sized enterprises. *International Journal of Accounting and Management Sciences, 2*(4), 377-394.https://www.doi.org/10.56830/IJAMS10202301

28. Lim, S. H., Kim, D. J., Hur, Y., & Park, K. (2019). An empirical study of the impacts of perceived security and knowledge on continuous intention to use mobile Fintech payment services. *International Journal of Human–Computer Interaction, 35*(10), 886-898. https://doi.org/10.1080/10447318.2018.1507132

29. Lutfi, A., Al-Okaily, M., Alshirah, M. H., Alshira'h, A. F., Abutaber, T. A., & Almarashdah, M. A. (2021). Digital financial inclusion sustainability in Jordanian context. *Sustainability, 13*(11), 6312.https://doi.org/10.3390/su13116312

30. Mafuwane, H. C., &Muchie, M. (2022). A case study of the Adoption of Electronic Payment Methods by Spaza Shop owners in Mkhuhlu Township in South Africa. *International Journal of Management, Innovation & Entrepreneurial Research, 8*(2), 1-9. https://doi.org/10.18510/ijmier.2022.821

31. Malik, S., Maheshwari, G. C., & Singh, A. (2021). Formal vs informal demand for credit by women in urban India: a comparative study in slums of Delhi and Mumbai. *Gender in Management: An International Journal, 36*(1), 131-148.https://doi.org/10.1108/GM-06-2019-0087

32. Masood, K., Maitlo, Q., Shaukat, Z., & Gul, W. (2023). Factors Influencing the Behavioral Intention to Adopt the Mobile Phone E-Wallet Services – A Post Covid Fintech and Financial Inclusion Study. *Journal of Namibian Studies: History Politics Culture, 33,* 1834-1857. Retrieved from https://openurl.ebsco.com/EPDB%3Agcd%3A13%3A5848157/detailv2?sid=ebsco%3Aplink%3Ascholar&id=ebsco%3Agcd%3A172940565&crl=c&link_origin=scholar.google.com

33. Mengistu, T. B. (2022). *The Impact of Digitization of Saving Groups (Edirs) for Financial Inclusion: The Case of a Startup Tech Company in Ethiopia*. Retrieved from https://www.diva-portal.org/smash/get/diva2:1713336/FULLTEXT03

34. Nguimkeu, P., & Okou, C. (2021). Leveraging digital technologies to boost productivity in the informal sector in Sub-Saharan Africa. *Review of Policy Research, 38*(6), 707-731.https://doi.org/10.1111/ropr.12441

35. Nguyen, D. D., Nguyen, T. D., Nguyen, T. D., & Nguyen, H. V. (2021). Impacts of perceived security and knowledge on continuous intention to use mobile Fintech payment services: An empirical study in Vietnam. *The Journal of Asian Finance, Economics and Business, 8*(8), 287-296. Retrieved from https://scholar.kyobobook.co.kr/search/article/total?keyword=Impacts%20of%20perceived%20security%20and%20knowledge%20on%20continuous%20intention%20to%20use%20mobile%20Fintech%20payment%20services%3A%20An%20empirical%20study%20in%20Vietnam

36. Nguyen, T. M., & Malik, A. (2022). Employee acceptance of online platforms for knowledge sharing: exploring differences in usage behaviour. *Journal of Knowledge Management, 26*(8), Retrieved from https://www.emerald.com/jkm/article-abstract/26/8/1985/267309/Employee-acceptance-of-online-platforms-for?redirectedFrom=fulltext

37. Ozili, P. K. (2023). Determinants of Fintech and BigTech lending: the role of financial inclusion and financial development. *Journal of Economic Analysis, 2*(3), 66-79. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4526151

38. Pandey, A., Kiran, R., & Sharma, R. K. (2022). Investigating the impact of financial inclusion drivers, financial literacy and financial initiatives in fostering sustainable growth in North India. *Sustainability, 14*(17), 11061.https://doi.org/10.3390/su141711061

39. Philippon, T. (2016). *The Fintech opportunity* (NBER Working Paper No. 22476). National Bureau of Economic Research. https://doi.org/10.3386/w22476

40. Raj, B., & Upadhyay, V. (2020). Role of Fintech in accelerating financial inclusion in India. In the *3rd International Conference on Economics and Finance* (pp. 28-29). Nepal Rastra Bank, Kathmandu, Nepal. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3591018

41. Rhyne, E. (2001). *Microfinance for Bankers and Investors: Understanding the Opportunities and Challenges of the Market at the Bottom of the Pyramid*. Center for Financial Inclusion. Retrieved from: https://cfi.nonprofitsoapbox.com/storage/documents/resources/microfinance.pdf

42. Sahay, R., Cihak, M., N'Diaye, M. P., Barajas, A., Mitra, S., Kyobe, A. J., Mooi, Y. N., &Yousefi, S. R. (2015). *Financial inclusion: can it meet multiple macroeconomic goals?* International Monetary Fund. Retrieved from https://ideas.repec.org/p/imf/imfsdn/2015-017.html

43. Saima, F. N., Rahman, M. H. A., & Ghosh, R. (2022). Gender Diversity in Fintech: An Effort Towards Creating an Inclusive and Sustainable Industry. In *AI-Enabled Agile Internet of Things for Sustainable Fintech Ecosystems* (pp. 66-92). IGI Global Scientific Publishing. Retrieved from https://www.igi-global.com/chapter/gender-diversity-in-fintech/306881

44. Siwela, G., &Njaya, T. (2021). Opportunities and challenges

for digital financial inclusion of females in the informal sector through mobile phone technology: Evidence from Zimbabwe. *International Journal of Economics, Commerce and Management, IX*(3), 60-77. Retrieved from https://ijecm.co.uk/wp-content/uploads/2021/03/935.pdf

45. Shithii, I. J., & Most. Sadia Akter. (2024). Financial Inclusion through Fin-tech Adoption of Women: A Way to Sustainable Development. *International Journal of Management and Humanities, 10*(5). Retrieved from https://www.ijmh.org/wp-content/uploads/papers/v10i5/E168510050124.pdf

46. Tripathi, S., & Rajeev, M. (2023). Gender-inclusive development through Fintech: Studying gender-based digital financial inclusion in a cross-country setting. *Sustainability, 15*(13), 10253.https://doi.org/10.3390/su151310253

47. Tubastuvi, N., & Purwidianti, W. (2023). Performance of Women-Led Smes in Indonesia: The Role of Financial Inclusion, Financial Literacy, and Technology adoption. *Journal of Law and Sustainable Development, 11*(12), e1899-e1899. https://doi.org/10.55908/sdgs.v11i12.1899

48. Zhang, W., Siyal, S., Riaz, S., Ahmad, R., Hilmi, M. F., & Li, Z. (2023). Data security, customer trust and intention for adoption of Fintech services: an empirical analysis from commercial bank users in Pakistan. *Sage Open, 13*(3), 21582440231181388. Retrieved from https://ideas.repec.org/a/sae/sagope/v13y2023i3p21582440231181388.html

http://dx.doi.org/10.21511/imfi.22(3).2025.33