

Nexus between women's financial empowerment, and digital financial literacy: The case of green microfinance in Tunisia

Kamel Bel Hadj Miled^{1*}, Monia Landolsi²

¹University of Sousse, Higher Institute of Management, Sousse, Tunisia; kamelbenmiled@gmail.com (K.B.H.M.).

²Department of Basic Sciences, Deanship of Preparatory Year and Supporting Studies, Imam Abdulrahman Bin Faisal University, Dammam 34212, Saudi Arabia; mmlandolsi@iau.edu.sa (M.L.).

Abstract: This study examines the relationship between financial literacy (FL) Green Microfinance (GM) and Women's Empowerment (WE). Alongside its economic and social implications, microfinance has adapted to address expanding demands by integrating environmental factors, resulting in the emergence of GM and WE. The connection between the empowerment of women and green microfinance is partly influenced by their level of FL. The findings highlight the significance of prioritizing financial strategies in Tunisia to promote policies that support women's empowerment, to fight poverty and environmental sustainability.

Keywords: ENDA association, Financial literacy, Green microfinance, Women empowerment.

1. Introduction

"Green microfinance" is a new area of study resulted from combining two previously distinct research field: microfinance (MF) and climate change (CC). Climate change appeared to be a luxury that the microfinance sector could neither afford nor imagine for many years [1]. Green microfinance extends this concept by promoting environmentally friendly and sustainable practices among microfinance institutions (MFIs) and their clients. In addition to its economic and social impacts, microfinance has emerged as a response to growing needs while also considering the environmental aspect. This has led to the emergence of green microfinance. Furthermore, it is worth noting that enhancing the financial infrastructure is not the sole solution to tackle financial inclusion. Our research demonstrates that an increased level of financial literacy also yields significant advantages to adopting a green approach to financial inclusion, which involves promoting specialized financial products that are environmentally friendly.

In recent years, microfinance has experienced a surge in popularity on the global scale as a financial market intricately connected to impoverished individuals. it refers to the provision of financial services, such as loans, savings, and insurance, to low-income individuals or communities who typically lack access to traditional banking services. The primary goal of microfinance is to empower people with limited resources by providing them with financial tools and resources to improve their economic situations. The relationship between microfinance and poverty reduction is a complex and debated topic, and it's important to consider various perspectives. Some microfinance institutions charge relatively high interest rates to compensate for the risk associated with lending to individuals without traditional collateral. This can sometimes lead to over-indebtedness among borrowers. The direct impact of microfinance on poverty reduction is debated. While success stories exist, some studies suggest that the impact may vary, and not all participants experience significant improvements in their economic conditions. In conclusion, while microfinance has the potential to contribute to poverty reduction by providing financial services to underserved populations, its success depends on various factors,

including the design of programs, local economic conditions, and the ability of microfinance institutions to balance financial sustainability with social impact.

However, the emergence of global warming and its consequential alterations in the Earth's climate pattern have emerged as a novel source of risk for the mission of microfinance. The persistence of pro-poor financial initiatives in impoverished regions is facing an escalating threat due to the emergence of global warming and the subsequent changes in the Earth's climate pattern. This poses a significant challenge to the mission of microfinance [2].

Women face limited opportunities to escape poverty, which consequently increases their reliance on microfinance [3].

The lack of education and financial resources contribute to the disempowerment of women. To combat this issue, it is crucial to promote female empowerment, which can help address the challenges of limited education, cultural stigmas, and gender disparities [4]. Financial literacy plays a crucial role in attaining a minimum of nine out of the seventeen Sustainable Development Goals (SDGs). However, it is important to acknowledge that financial illiteracy impacts various groups, including women, individuals with low income, and those with limited education, leading to notable disparities in financial literacy [5].

Tunisia, like other developing nations, has demonstrated its interest and commitment to this development approach by adopting financial associations. These associations hold a significant position in Tunisia as they actively promote the principles of women's economic empowerment development and sustainable development.

The paper proceeds as follows: Section 2 explains a brief literature review. Section 3 presents the methodology employed in the study. Section 4 elaborates the empirical results. Section 5 presents the discussion. Lastly, Section 6 highlights the conclusion, and policy implications.

2. Literature Review

2.1. Women's Empowerment and Financial Literacy

Women's empowerment refers to the process of enhancing women's abilities, confidence, and choices, enabling them to have control over their lives and participate actively in socio-economic and political activities. The empowerment of women and financial literacy are intertwined forces that, when addressed together, can lead to positive outcomes for individuals, communities, and societies as a whole. By promoting both, we can work towards creating a more equitable and prosperous world. Several researchers have recently highlighted the connection between women's empowerment and financial literacy.

Women can improve their financial literacy through education [6]. Financial literacy education is a key component of women's empowerment. It equips women with the knowledge and skills necessary to make informed financial decisions, thereby enhancing their economic independence.

Advocating for the promotion of financial literacy among women is crucial in providing them with the necessary understanding and grasp of complex financial concepts and practices, including cashflows, saving, investing, and debt management [7]. The success of establishing rural entrepreneurship for female entrepreneurs is contingent upon their level of financial literacy [8]. Furthermore, promoting continuous interdisciplinary research on retirement policies for women will contribute to enhancing educational programs through strong financial literacy initiatives and the integration of technology. Therefore, it is the duty of policymakers, financial institutions, non-governmental organizations (NGOs), employers, and other stakeholders to collaborate effectively and implement comprehensive intervention strategies [9] in order to expedite the establishment of a fairer society.

The empowerment of women and financial literacy are intertwined forces that, when addressed together, can lead to positive outcomes for individuals, communities, and societies as a whole. By promoting both, we can work towards creating a more equitable and prosperous world.

2.2. Financial Literacy and Green Microfinance

Financial literacy and green microfinance are two important concepts that intersect in the realm of sustainable and inclusive finance. Green microfinance focuses on providing financial services to individuals or small businesses engaged in environmentally sustainable activities. These activities often include projects related to renewable energy, eco-friendly agriculture, waste management, and other initiatives that contribute to environmental conservation and climate change mitigation, the goal of green microfinance is to support environmentally friendly projects while simultaneously promoting economic development and poverty alleviation. By providing financial resources and technical assistance, green microfinance institutions contribute to building a more sustainable and resilient economy which encourages the use of green finance [10]. Many microfinance institutions need to make adjustments to their administrative and operational requirements, financial products, and credit evaluation techniques for inexperienced in this field of operation [11]. Integrating financial literacy with green microfinance is crucial for ensuring the success and impact of sustainable initiatives. Here's how they can complement each other: Financial literacy can enable borrowers to assess and communicate the social and environmental impact of their projects. This, in turn, allows microfinance institutions and stakeholders to track the success of green initiatives and make data-driven decisions. In summary, the integration of financial literacy and green microfinance creates a powerful synergy that not only supports economic development but also contributes to environmental sustainability. This approach empowers individuals to make informed decisions that benefit both their financial well-being and the planet.

2.3. Women's Empowerment, Green Microfinance, and Financial Literacy

There are a various constraint that restrict women's financial access, primarily stemming from a deficiency in financial literacy [12].

Microfinance has been granting financial access to individuals and small enterprises who were previously unable to engage with the formal financial system [13, 14].

Recent studies have shifted their focus towards environmental and governance aspects, as well as their interrelation with the other two dimensions of sustainability. This entails examining the connections between social and environmental factors, such as microfinance, gender equity, and the environment [15] and examining the necessary regulatory modifications to effectively implement microfinance for the achievement of sustainable development [16, 17]. The green finance sector offers a range of opportunities and benefits, as well as presenting various obstacles to enhance the economic status and power dynamics of women and provide a range of environmentally-friendly financial products to support their clients' green initiatives [18], but it can only achieve this when coupled with financial literacy [19].

The subsequent discussion will center on the identification of the green economy and the development of green credits, drawing from ENDA Tamweel's experience in Tunisia

2.4. Green Economy in Tunisia: Case of ENDA

Tunisia established a brief objective to incorporate environmentally friendly jobs into the updated national employment plan from 2014 to 2017. According to a study conducted by the United Nations Economic Commission for Africa (2014-2020), comprehensive plan for the Green Economy (2016-2036) is currently in the works, focusing on aligning economic, social, and environmental policies through a unified strategy that engages all sectors of society. This initiative will encompass legislation pertaining to the green economy. Tunisia has been making efforts to increase its use of renewable energy sources. The country has significant solar and wind energy potential, and there have been initiatives to develop solar and wind power projects. Investing in renewable energy can contribute to reducing greenhouse gas emissions and promoting a more sustainable energy sector. The initial axis was initiated in 2009 with the implementation of a Mediterranean solar project. The goal is to supply Tunisia with 1,000

megawatts of renewable energy by 2016, with a target of achieving 4,700 megawatts by 2030[21]. Furthermore, Agriculture is a significant sector in Tunisia. Implementing sustainable agricultural practices, such as organic farming, water conservation, and agroecology, can contribute to a greener economy. These practices aim to reduce the environmental impact of agriculture and enhance resilience to climate change

In 2015, ENDA made the decision to establish a microfinance company called ENDA Tamweel, following the approval of the new microfinance law in 2011. ENDA Tamweel comprises a total of 79 credit agencies. Its objective is to foster the economic and societal integration of the disadvantaged populace and to contribute to the economic and social progress of the nation.

3. Results and Discussions

Established in 1990, Enda Inter-arabe stands out as the premier microfinance institution in Tunisia. It has emerged as the most successful MFI in the country, boasting a large client base of 291,000 spread across 79 branches, and impressive financial performance with an average ROE of 21%. Enda's primary focus is on providing loans to low-income households and female micro-entrepreneurs in Tunisia, offering a variety of microcredit products tailored to their specific requirements. In response to regulatory changes, Enda has established Enda Tamweel to oversee financial services, while the NGO continues to offer non-financial services. Enda, the top MFI in Tunisia, has been at the forefront of financial education initiatives, reaching out to 15,000 clients by December 2016. Meanwhile, smaller-scale initiatives aimed at providing financial education have been implemented by NGOs like the Center of Arab Women for Training and Research, with the backing of Microfinance Opportunities. In the post-revolution era, Mercy Corps has introduced a financial education program for youth. Our research indicates that financial literacy or education is not integrated into the official curricula of schools, vocational training centers, or universities.

Table 1.
Main activity areas (goal, targets, resources and time frame) and outputs.

Goal	Results as at Nov. 2017	% Achievement	Comments
10,000 clients in branches viewing the financial education videos	22,302 clients trained	223%	Reported by Enda as of Nov. 2017
20,000 clients trained via mobile and other media	21,582 clients trained	108%	Reported by Enda as of Nov. 2017
Clients increase their savings by 10%	80% of the clients trained improved their savings in 50%	500%	The Enda call centre called 350 clients and contacted and surveyed 189 clients trained on FE
10,000 new clients.	10,000 new clients.	10,000 new clients.	10,000 new clients.

Source: Enda 2017.

Prior to the financial education program, the majority of the clientele possessed an understanding of the significance of effectively handling their finances. However, they were deficient in either the necessary resources or the drive to uphold a disciplined approach towards expenses and savings. Consequently, they encountered financial strain due to insufficient funds or savings to address unexpected circumstances.

Prior to the financial literacy program, the majority of the clients understood the significance of money management, yet they were missing the necessary resources or drive to uphold a disciplined approach to expenses and savings. Consequently, they experienced financial strain due to insufficient funds or savings to handle unexpected financial crises. According the ENDA Annual Report (2016–2017) in Table 1, women increased their saving, reducing the initial gap between monthly savings after receiving FE. (Exchange rate TND 2.407 per USD).

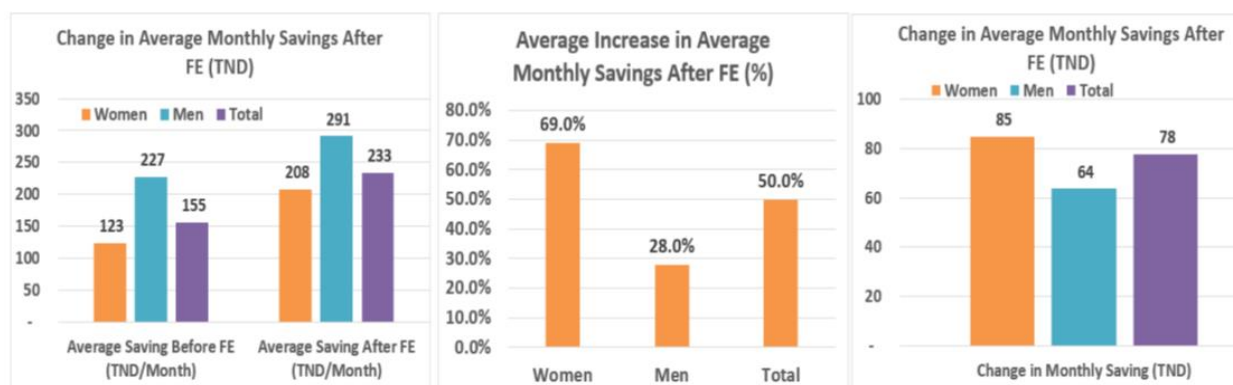


Figure 1.

Source: ENDA Annual Report (2016–2017).

ENDA has established a system to oversee activities pertaining to the environment and the implementation of energy efficiency measures and resources. Additionally, in late 2015, a rise in environmental consciousness prompted ENDA to offer customers "green credit" products focused on recycling and waste development. These credits are designated for ragpickers, also known as "Berbecha", and for recyclable materials collection centers.

Table 2.

ENDA's distribution of credits.

Type of financial product	Number of allocated credits in 2015	%	Number of allocated credits in 2016	%
Solfa	77,050	28	58,900	19.7
Mawalni	89,550	33	102,150	34
Méchiya	34,600	13	32,900	11
Mawssem	42,600	15	54,000	18
Bidaya	4,750	2	3,110	1
Eco-Prêt	55	0	235	0.07
Forsa	75	0	630	0.2
Darna	9,820	4	11,000	4
Tâalim	12,500	5	33,000	11
Ardhi	0	0	425	0.14
Mazraati	0	0	120	0.04
Machrou3i	0	0	1,904	0.65
Moassassti	0	0	406	0.13
Bideya +	0	0	166	0.05
Bideyati	0	0	60	0.02
Total	271,000	100	299,000	100

Source: ENDA annual report (2015–2016).

In its early stages, this particular form of green credit, also known as an ecological loan or Berbecha, has had limited adoption. In 2015, only 280 customers were able to take advantage of this credit, resulting in a remarkable amount of 750,000 dinars distributed across more than 350 loans. However, the following year, in 2016, the number of green credits granted, now referred to as "Raskhala," decreased to 235, with an outstanding amount of 505,000 dinars.

The implementation of irrigation systems led to excessive pumping as a result of the cost-effectiveness of solar power in comparison to diesel, the traditional fuel used. This over-extraction of water resources poses a threat to the environment and can result in crop diseases. The excessive watering of date palms caused the grass surrounding the trees to flourish, leading to an increase in mites that caused a 30-50% loss in date harvests. Consequently, Enda and ADA¹ enlisted the consultancy firm ALCA² to deliver a technical support program in favor of Eco-shems. This initiative offered training sessions to groups of producers in the plantations. Participants were educated on proper water resource management, specifically through drip irrigation, as well as weed control methods and strategies to combat dust mites. Following the training, each participant received six months of individualized support (coaching). A total of 41 producers benefited from this technical assistance.

ENDA Tamweel is dedicated to minimizing its environmental impact through the implementation of eco-friendly practices among its customers and employees. The institution refrains from funding activities that are detrimental to the environment and supports sustainable micro-enterprises by developing new products that have a positive environmental influence, such as reducing energy consumption and enhancing sanitary conditions.

In terms of gender, the distribution of clients at ENDA in 2016 clearly demonstrates a dominance of female clients, with over half (64%) being women. This highlights ENDA Tamweel's dedication to supporting women in entrepreneurship. ENDA Tamweel is committed to ensuring that its offerings and services are easily accessible and specifically tailored to meet the needs of women. By empowering women to pursue employment opportunities and establish their own businesses, ENDA Tamweel recognizes the positive impact it has on their families' overall well-being. As women dedicate a significant portion of their time, energy, and income towards their families, enabling them to thrive economically benefits not only the women themselves but also enhances the quality of life for their loved ones.

4. Conclusion

The Tunisian government has been developing policies and strategies to support the green economy. This includes setting targets for renewable energy capacity, implementing regulations for sustainable practices, and creating an enabling environment for green businesses. Tunisia has been working to increase its share of green economy in the overall energy mix. The country has significant solar and wind energy potential, and various projects have been implemented to harness these resources. The development of solar power plants and wind farms is part of Tunisia's efforts to transition to a more sustainable energy system. In addition, sustainable agricultural practices have gained attention. Efforts have been made to promote organic farming, water-efficient irrigation systems, and environmentally friendly agricultural techniques to ensure the long-term health of the agricultural sector.

Protecting biodiversity is crucial for a sustainable and resilient environment. Tunisia's diverse ecosystems, including coastal areas and desert regions, require conservation efforts. Sustainable tourism practices are also essential to balance economic development with environmental preservation.

ADA (Appui au développement autonome) is a Luxembourgish NGO that has been enhancing the self-reliance of marginalized individuals in ¹ Africa, Central America, and South-East Asia through inclusive financial services since 1994, thus aiding in the attainment of sustainable development objectives.

Latin American Association of Plant Sciences (ALCA)²

The significance of green microfinance lies in its role as a compelling tool to address regional inequalities and alleviate youth unemployment. Green employment, in essence, encompasses activities aimed at minimizing energy consumption, preserving raw materials, and conserving natural resources.

Despite the valuable information it offers on green microfinance in Tunisia and the role of ENDA in providing ecological credit, this study has encountered certain limitations. Specifically, there is a dearth of concrete statistical data and widespread information pertaining to this subject.

Copyright:

© 2024 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

References

- [1] McKee, K. (2008). Microfinance: climate change connections. *Development Outreach*, 10(1), 35-37. doi:10.1596/1020-797X-10-1_35 <http://www.mixmarket.org/mfi/country/Brazil>
- [2] Krefst, S., Eckstein, D., Junghans, L. Kerestan, C., & Hagen, U. (2014). *Global climate risk index 2015. Who suffers most from extreme weather events? Weather-related loss events in 2013 and 1994 to 2013*. Bonn: Germanwatch. Purchase order number: 15-2-01e ISBN 978-3-943704-23-5 www.germanwatch.org/en/cri
- [3] Boehe, D.M.; Cruz, L.B. (2013) : Gender and microfinance performance: Why does the institutional context matter? *World Dev.* 47, 121–135
- [4] <http://dx.doi.org/10.1016/j.worlddev.2013.02.012>
- [5] Mahjoub, L.B. and Amara, I. (2020), "The impact of cultural factors on shareholder governance and environmental sustainability: an international context", *World Journal of Science, Technology and Sustainable Development*, Vol. 17 No. 4, pp. 367-385, doi: 10.1108/WJSTSD-06-2020-0060.
- [6] Shakti, S. (2022). Why Financial Literacy Matters. Available online: <https://www.pyxeraglobal.org/financial-literacy-matters/>
- [7] Akinsemolu, A.A.; Olukoya, O.A.P. (2020). The vulnerability of women to climate change in coastal regions of Nigeria: A case of the Ilaje community in Ondo State. *J. Clean. Prod.* 246, 119015. <https://doi.org/10.1016/j.jclepro.2019.119015>
- [8] S. Agarwal, G. Amromin, I. Ben-David, S. Chomsisengphet, D.D. Evanoff, (2011) Financial Counseling, Financial Literacy, and Household Decision-Making. *Financial Literacy: Implications for Retirement Security and the Financial Marketplace*, p. 181 <http://dx.doi.org/10.1093/acprof:oso/9780199696819...>
- [9] Atahau, A.D.R.; Sakti, I.M.; Huruta, A.D.; Kim, M.-S. (2021). Gender and renewable energy integration: The mediating role of green microfinance. *J. Clean. Prod.* 318, 128536. <https://doi.org/10.1016/j.jclepro.2021.128536>
- [10] Sundarasan, M.S. Rahman, N. Rajangam, R. Sellappan, (2014) "Cradle to Grave" financial literacy programs and money management, *Int. J. Econ. Finance* 6 (6) 240–246. DOI:10.5539/ijef.v6n6p240
- [11] German Sparkassenstiftung, (2020). Role of Microfinance Institutions in Green Financing. Available online: <https://sparkassenstiftungeasternafrika.org/media/detail/role-of-microfinance-institutions-in-green-financing-1039#>
- [12] Microfinance Centre watch: Advancing Green Microfinance—Entering Green Finance Space by MFIs. Available online: <https://mfc.org.pl/advancing-green-microfinance-entering-green-finance-space-by-mfis-join-us-for-the-webinar-on-2ndmarch-2021/> (accessed on 21 January 2022).
- [13] Salman, A.; Nowacka, K. (2020), *Innovative Financial Products and Services for Women in Asia and the Pacific*; ADB Sustainable Development Working Paper Series; Asian Development Bank: Mandaluyong, Philippines. <http://dx.doi.org/10.22617/WPS200119-2>
- [14] van Rooyen, C., Stewart, R., & de Wet, T. (2012). The impact of microfinance in Sub-Saharan Africa: A systematic review of the evidence. *World Development*, 40(11), 2249–2262. <https://doi.org/10.1016/j.worlddev.2012.03.012>
- [15] Ledgerwood, J. (1998). *Microfinance handbook: An institutional and financial perspective*. The World Bank. <https://doi.org/10.1596/978-0-8213-4306-7>
- [16] Warnecke, T. (2015), 'Greening' gender equity: Microfinance and the sustainable development agenda. *J. Econ. Issues*, 49, 553–562. DOI: 10.1080/00213624.2015.1042803
- [17] Ramaswamy, A., & rishnamoorthy, A. (2016). The Nexus Between Microfinance & Sustainable Development: Examining The Regulatory Changes Needed For Its Efficient Implementation. *European Journal of Sustainable Development*, 5(3), 453-460. <https://doi.org/10.14207/ejsd.2016.v5n3p453>
- [18] Chakrabarty, S.; Bass, A.E. (2015). Comparing Virtue, Consequentialist, and Deontological Ethics-Based Corporate Social Responsibility: Mitigating Microfinance Risk in Institutional Voids. *J. Bus. Ethics*, 126, 487–512. DOI: 10.1007/s10551-013-1963-0

- [19] Cheng-Wen Lee; Chin-Chuan Wang; Hui-Hsin Hsu; Peiyi Kong (2023) The Assessment of Green Business Environments Using the Environmental–Economic Index: The Case of China <https://doi.org/10.3390/su152316419>
- [20] Nawaz, F. (2015) Microfinance, financial literacy, and household power configuration in rural Bangladesh: An empirical study on some credit borrowers. 1100–1121 DOI 10.1007/s11266-015-9585-z
- [21] Lobna Abid; Sana Kacem (2018). “Why are we going to Green microfinance in Tunisia?” Environmental Economics, Volume 9, Issue 4, [http://dx.doi.org/10.21511/ee.09\(4\).2018.01](http://dx.doi.org/10.21511/ee.09(4).2018.01)