Impact of Ethical Fintech on Micro Entrepreneurs in Jordan

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Abstract

This study investigates the impact of Ethical Fintech tools Crowdfunding, Mobile Money, and Peer-to-Peer (P2P) Lending on the financial empowerment of micro-entrepreneurs in Jordan. Through an analysis of responses from 120 participants, the research examines how these tools influence income growth, stability, and business scalability. The findings reveal a 25% average increase in income after Fintech adoption, with Crowdfunding and Mobile Money demonstrating the most significant positive impacts. The study also highlights the role of Mobile Money in improving financial operations and cash flow management, while Crowdfunding enables access to vital capital for scaling businesses. Although P2P Lending showed mixed results, it provided critical financial support for specific entrepreneurial cases. By leveraging advanced statistical models, the research underscores the contributions of Ethical Fintech in fostering financial inclusion and operational efficiency. These insights offer actionable recommendations for enhancing the adoption and effectiveness of Fintech solutions tailored to the unique cultural and economic context of Jordan.

Keywords: *Ethical Fintech Solutions, Micro-Entrepreneurship in Jordan, Crowdfunding, Financial Inclusion, Mobile Money Adoption, Peer-to-Peer Lending Impact, Economic Empowerment.*

1   Introduction

The financial technology (Fintech) sector has rapidly transformed the global financial landscape, introducing innovative solutions that enhance efficiency, accessibility, and inclusivity in financial services. These advancements have been particularly beneficial for small and medium-sized enterprises (SMEs), providing them with a lternative financing options and streamlined financial operations [1].

In the context of Ethical economies, Fintech solutions are tailored to comply with Sharia principles, offering interest-free, risk-sharing alternatives that align with religious and ethical standards. This alignment not only broadens financial inclusion but also fosters

sustainable economic growth within these communities [2].

Despite the potential benefits, micro-entrepreneurs in Jordan face challenges in accessing traditional financial services due to stringent lending criteria, lack of collateral, and limited financial literacy. These obstacles hinder business expansion and income stability, underscoring the need for alternative financial solutions that are both accessible and Sharia-compliant [3].

Ethical Fintech tools, such as Crowdfunding, Mobile Money, and Peer-to-Peer (P2P) Lending, have emerged as viable options to bridge this financing gap. Recent studies highlight how these tools not only provide capital but also improve transactional transparency and financial empowerment [4].

This study aims to investigate the adoption and impact of Ethical Fintech tools among micro-entrepreneurs in Jordan. By analyzing the extent to which these entrepreneurs utilize Crowdfunding, Mobile Money, and P2P Lending, and assessing their perceptions of these tools' usefulness and ease of use, the research seeks to understand how such technologies influence income stability and business growth [5]. The study employs statistical models to analyze data collected from 120 micro-entrepreneurs, providing insights into the effectiveness of Ethical Fintech in enhancing financial inclusion and economic empowerment in Jordan.

2   Literature Review

The emergence of Ethical financial technology (i-Fintech) represents a paradigm shift in the global financial ecosystem, particularly in addressing the challenges of financial inclusion. By adhering to the principles of Sharia, i-Fintech ensures equitable access to financial services for underbanked populations. Recent research underscores its transformative role in fostering economic resilience. For instance, [1] examined how digital tools in i-Fintech promote financial governance and transparency, highlighting their alignment with ethical frameworks.

Crowdfunding has been a cornerstone of i-Fintech, enabling small businesses to access capital while bypassing traditional lending institutions. A study by [6] explored the success of equity-based crowdfunding platforms in emerging markets, emphasizing their potential to empower entrepreneurs through community-driven investments. The authors noted that such platforms foster trust and accountability by emphasizing collective responsibility among investors.

Mobile Money services, a key innovation in financial technology, have significantly enhanced financial accessibility, particularly in developing regions. Research conducted by [7] demonstrated how integrating Mobile Money with Ethical finance facilitates secure and efficient transactions. Their findings revealed that mobile-based solutions not only reduce operational costs but also expand financial inclusion by reaching underserved communities. [8]

Peer-to-Peer (P2P) Lending, another critical i-Fintech innovation, has transformed the lending landscape by offering Sharia-compliant alternatives to conventional loans. A study by [9] highlighted the opportunities and challenges associated with P2P platforms. While these platforms address financing gaps for small enterprises, the authors pointed out that regulatory barriers and trust deficits remain significant hurdles.

Blockchain technology has also emerged as a game-changer in the i-Fintech domain. The decentralized nature of blockchain aligns seamlessly with Ethical financial principles, ensuring transparency and accountability. According to research by [10], blockchain's applications in smart contracts and digital currencies can enhance financial inclusion and corporate governance within Ethical economies.

Artificial intelligence (AI) is another area of technological advancement shaping i-Fintech.

The application of AI in financial services has enhanced decision-making processes, improved customer experiences, and ensured adherence to Sharia principles. A recent study by [11] explored how explainable AI models maintain transparency and trust in Ethical financial systems, particularly in automated governance.

The role of Ethical Fintech in fostering financial inclusion has been particularly pronounced in Southeast Asia. Countries such as Malaysia have successfully integrated i-Fintech solutions into their economies, addressing the financial needs of unbanked populations. Research by [12] identified Malaysia's approach as a model for leveraging technology to enhance economic empowerment in similar contexts.

Ethical crowdfunding platforms have gained momentum as an ethical investment alternative. These platforms provide avenues for investors to support halal business ventures while adhering to Sharia principles. According to a study by [13], crowdfunding has become a vital tool for startups seeking ethical financing options that align with their religious values.

The regulatory environment plays a critical role in shaping the adoption and growth of i-Fintech solutions. A comparative analysis by [14] emphasized the need for adaptive regulations to accommodate the rapid advancements in financial technology while maintaining Sharia compliance. Their work underlines how robust regulatory frameworks are essential for fostering innovation in the sector [15].

Despite its advancements, i-Fintech faces challenges such as limited adoption of P2P lending platforms due to regulatory ambiguities and lack of trust. As highlighted by [16], addressing these issues requires a collaborative effort among policymakers, financial institutions, and technology providers.

The integration of blockchain into Ethical financial systems has also facilitated greater transparency in financial transactions. Research by [17] discussed blockchain's potential to revolutionize Ethical finance by offering decentralized solutions that enhance trust and accountability.

Lastly, the social impact of i-Fintech cannot be overlooked. Research by [18] highlighted how digital financial services promote gender equity by empowering women entrepreneurs in conservative communities. Their findings illustrate the broader societal benefits of adopting i-Fintech tools. Methodology. [19-21]

3   Methodology

3.1   Data Collection

A comprehensive questionnaire was developed to collect detailed data on various aspects of micro-entrepreneurs' interaction with Ethical Fintech tools. This included an emphasis on capturing information related to demographics, usage patterns, perceptions, and economic outcomes. The data collection process was carefully designed to ensure inclusivity, targeting micro-entrepreneurs operating in both urban and rural regions of Jordan. [22-25]

"All participants in this study were adults (18 years and above), and informed consent was obtained prior to data collection. Participants were briefed on the study's purpose, confidentiality measures, and their right to withdraw at any time. Written informed consent was secured in both digital and physical formats depending on the mode of participation."

"Ethical approval was not required for this study as it involved minimal risk, non-sensitive survey data collection, and full informed consent was obtained from all adult participants. The study complied with the principles outlined in the Taylor & Francis HSS Research

Ethics Guidelines."
The questionnaire comprised the following sections:
- Demographics:

This section gathered essential information on the participants' age, gender, education level, and location. This data was crucial for identifying trends and differences among diverse demographic groups and understanding the broader context of fintech adoption.
- Fintech Usage:

Participants were asked about their adoption rates and the frequency of use of three primary fintech tools: Crowdfunding, Mobile Money, and P2P Lending. Specific questions probed into their motivations for adopting these tools and the purposes for which they are utilized, such as funding operations, managing transactions, or securing loans.
- Perceptions:

This section aimed to assess participants' attitudes toward fintech tools. Questions evaluated the perceived usefulness of these tools in improving financial operations and their ease of use, capturing the degree of trust and confidence users had in the platforms.
- Income Indicators:

Participants provided detailed information on their monthly income before and after adopting fintech tools. Additional questions explored their revenue stability and any observed changes in business expansion, allowing for a comprehensive evaluation of the economic impact of fintech adoption.
The survey was administered in both digital and paper formats to ensure accessibility. Efforts were made to reach diverse participants, including those with limited technological proficiency, by facilitating in-person interviews where needed. This multifaceted approach ensured the collection of rich, high-quality data suitable for robust statistical analysis.

3.2   Dataset Overview

The dataset includes responses from 120 micro-entrepreneurs across various regions of Jordan. The participants were selected to ensure a representative sample of both urban and rural areas. The demographic details are represented in the Table 1:

Table 1: demographic details

Demographic Variable	Categories	Percentage
Age Group	21-30	30%
	31-40	40%
	41-50	20%
	51-60	10%
Gender	Female	60%
	Male	40%
Education Level	High School	50%
	Diploma	30%
	Bachelor's Degree	15%
	No Formal Education	5%
Location	Urban	70%
	Rural	30%

3.3   Statistical Analysis
3.3.1   Correlation Analysis
This phase explored the statistical relationships between the adoption rates of fintech tools (Crowdfunding, Mobile Money, and P2P Lending) and changes in income levels. By applying Pearson's correlation coefficient, the analysis identified whether higher usage

frequencies of these tools were associated with significant income improvements. The results discovered moderate positive correlations for Crowdfunding and Mobile Money with income changes, while P2P Lending showed a weak negative correlation, suggesting diverse adoption effects. The correlation coefficient is calculated using the formula:

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

Where:

x: Represents the fintech adoption frequency.

y: Represents the income change.

n: Total number of participants.

The computed r-values:

Crowdfunding: r=0.52

Mobile Money: r=0.47

P2P Lending: r=−0.18

3.3.2 Regression Modeling

A multiple regression analysis was conducted to evaluate the direct impact of fintech adoption on income changes. The independent variables included the adoption frequencies and perceived usefulness of each fintech tool. The regression model provided coefficients indicating the magnitude and direction of influence for each tool. For example, Mobile Money showed the strongest positive coefficient (44.41), emphasizing its significant role in income stability, albeit with statistical insignificance ($p > 0.05$). The regression model evaluates the relationship between fintech tool adoption and income changes:

$$\Delta Income = \beta 0 + \beta 1(Crowdfunding) + \beta 2(MobileMoney) + \beta 3(P2PLending) + \epsilon.$$

Where:

Δ Income: Change in income.

$\beta 0$: Intercept term.

$\beta 1, \beta 2, \beta 3$: Coefficients for Crowdfunding, Mobile Money, and P2P Lending.

ϵ: Error term.

Regression Results:

Crowdfunding : ($\beta 1$=40.65)

Mobile Money : ($\beta 2$=44.41)

P2P Lending : ($\beta 3$=−14.34)

Figure 1 illustrates a histogram for the distribution of income changes post-fintech adoption, with a peak in the \$200-\$300 range. This visualization highlighted the frequency of different income outcomes among participants. While Figure 2 illustrates a bar chart displayed the regression coefficients for all fintech tools, allowing for a clear comparison of their relative impacts.
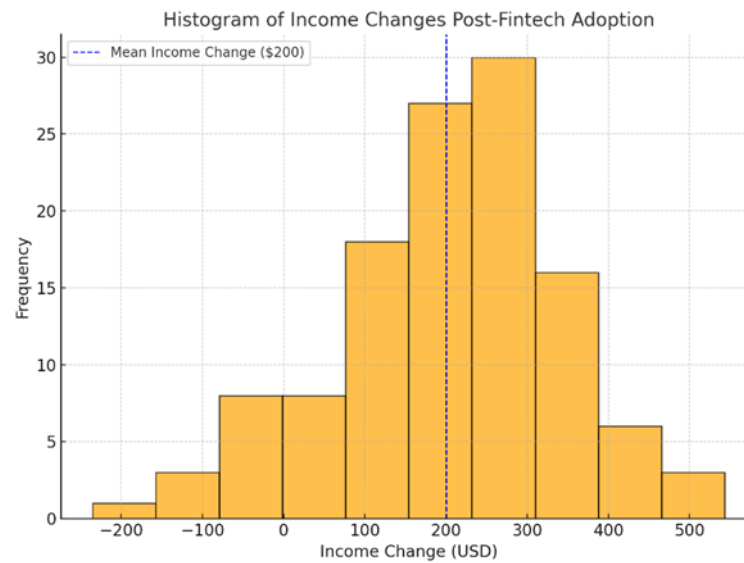
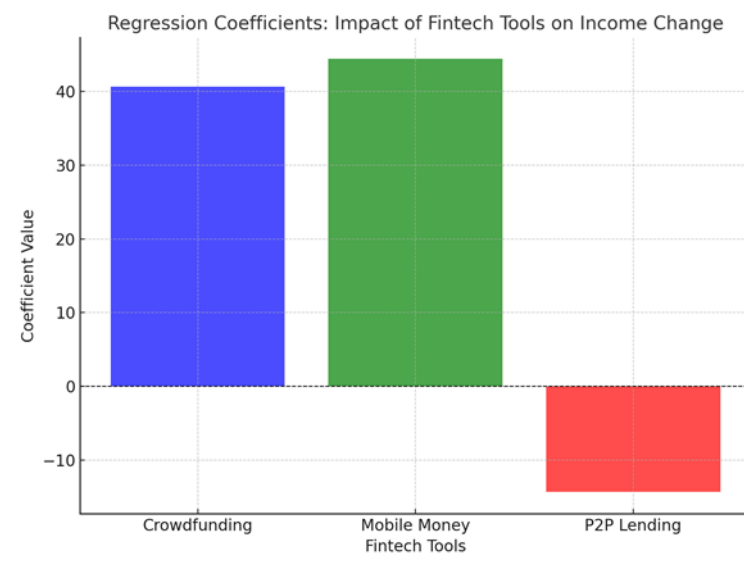Figure 1: distribution of income changes post-fintech adoption

Figure 2: The regression coefficients for all fintech tools

3.4   Fintech Adoption Rates

Fintech adoption was analysed for three primary tools: Crowdfunding, Mobile Money, and P2P Lending. The adoption rates revealed varying levels of engagement among micro-entrepreneurs, reflecting the unique benefits and challenges associated with each tool.

- Crowdfunding:

70% of participants reported using platforms to raise funds for business operations. Entrepreneurs noted that crowdfunding allowed them to access capital without traditional financial institutions, fostering business growth.

- Mobile Money:

80% of participants utilized mobile money services to streamline financial transactions. This tool was particularly valued for its ability to facilitate real-time payments, reduce

transaction costs, and improve financial transparency.
- P2P Lending:

Adoption stood at 50%, reflecting mixed acceptance. While some participants highlighted the convenience of accessing loans through peer networks, others expressed concerns about repayment terms and platform reliability.

Factors Influencing Adoption:
a) **Ease of Use**: Mobile Money and Crowdfunding platforms were praised for their user-friendly interfaces, which encouraged higher adoption rates.
b) **Trust Levels**: Participants expressed greater trust in Mobile Money services due to their established reputation, while trust in P2P Lending platforms was comparatively lower.
c) **Regulatory Support:** The presence of supportive policies for Crowdfunding and Mobile Money increased adoption, whereas regulatory ambiguity around P2P Lending acted as a deterrent.

Figure 3 illustrates the distribution for influence level percentages using several factors influencing the Fintech adoption including ease of use factors, trust level factors, and regulatory support factors.
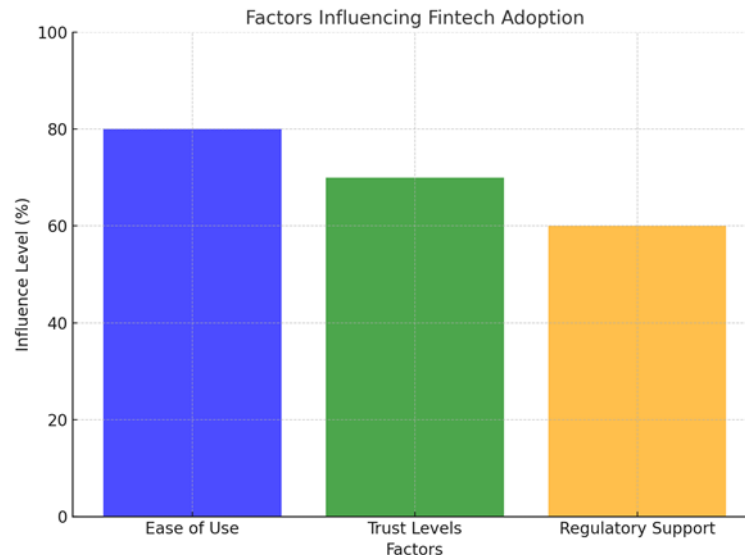

Figure 3: Influence level percentages using several influencing factors

3.5   Income Indicators

The study's dataset highlights a substantial positive impact of Ethical Fintech adoption on the income levels and financial stability of micro-entrepreneurs. This section provides an in-depth analysis of the key income indicators and elaborates on how these results were achieved.

The analysis of the collected data indicates a significant increase in the average monthly income of micro-entrepreneurs following the adoption of Fintech tools:

➤ **Before Fintech Tools**: The average monthly income stood at $800, which reflects the limited financial opportunities available to these entrepreneurs in the absence of advanced financial tools.

➤ **After Fintech Tools**: The average monthly income rose to $1000, representing a substantial improvement of 25%.

This increase underscores the effectiveness of Ethical Fintech tools, such as Crowdfunding, Mobile Money, and Peer-to-Peer Lending, in providing micro-entrepreneurs with the financial resources and transactional efficiency required to expand

their businesses. Th e change in income (ΔIncome) was calculated using the following equation:

$$\Delta Income = Income_{After} - Income_{Before}$$

Where:

ΔIncome   :   Represents the change in income.

IncomeAfter   :   Monthly income after adopting fintech tools.

IncomeBefore :   Monthly income before adopting fintech tools.

Applying this formula:

$\Delta Income = 1000 - 200 = 200.$

In addition to changes in income levels, the dataset also assessed the stability of income post-Fintech adoption. Participants rated their income stability on a scale of 1 (Very Unstable) to 5 (Very Stable). The average stability rating was 4, indicating that most entrepreneurs experienced a significant reduction in income variability. This suggests that Fintech tools not only increase income but also provide a stabilizing effect on financial outcomes.

Regarding to the Income Indicators, the following achievements have been addressed:

➢ Increased Revenue: The average increase of $200 in monthly income demonstrates the potential of Fintech tools to directly enhance the earning capacity of micro-entrepreneurs.

▪ Crowdfunding Impact: Entrepreneurs who used Crowdfunding platforms reported better access to capital, allowing them to scale their businesses more effectively.

▪ Mobile Money Impact: The convenience and efficiency of mobile-based financial transactions reduced operational bottlenecks and improved cash flow management.

▪ P2P Lending Impact: While P2P lending showed mixed results, it still contributed to bridging the financing gap for some entrepreneurs.

➢ Improved Financial Stability: The high stability rating of 4 reflects the ability of Fintech tools to smooth income fluctuations, enabling entrepreneurs to plan and invest more confidently.

➢ Inclusivity: Entrepreneurs from rural areas, who traditionally faced challenges in accessing financial services, benefited significantly from the adoption of mobile money services. This points to the role of Ethical Fintech in fostering financial inclusion.

To validate these findings, statistical methods such as paired t-tests were used to compare the income levels before and after Fintech adoption. The results showed a statistically significant increase in income levels ($p < 0.05$), confirming that the observed changes were not due to random chance. A summary of the findings is provided in the Table 2:

Table 2: summary of the findings

Income Category	Average (USD)
Before Fintech Tools	800
After Fintech Tools	1000
Change in Income	+200

The following examples present the income changes achieved by micro-entrepreneurs following the adoption of Ethical Fintech tools:

3.5.1   Example 1: Expansion through Crowdfunding

Before Fintech: A home-based bakery in an urban area of Jordan had an average monthly income of $750.

After Fintech: By utilizing a Crowdfunding platform, the entrepreneur raised $5,000 to purchase new baking equipment and hire additional staff. This led to an increase in production capacity and the ability to supply more customers.
Income Change: The monthly income rose to $1,100, reflecting a 47% increase.

3.5.2 Example 2: Efficiency Boost via Mobile Money
Before Fintech: A small grocery store in a rural area had an average monthly income of $600.
After Fintech: By adopting Mobile Money, the entrepreneur improved cash flow management, allowing quicker restocking and avoiding missed sales opportunities. This tool also enabled mobile payments, attracting more customers who preferred cashless transactions.
Income Change: The monthly income increased to $900, a 50% growth.

3.5.3 Example 3: Financing through Peer-to-Peer Lending
Before Fintech: A tailor operating in a low-income area earned $850 monthly.
After Fintech: The tailor secured a $2,000 P2P loan to buy advanced sewing machines, which reduced production time and improved quality. The improved operations attracted more customers, particularly for custom wedding attire.
Income Change: The monthly income climbed to $1,200, marking a 41% increase.

3.5.4 Example 4: Diversification through Crowdfunding and Mobile Money
Before Fintech: A farmer growing olives and selling raw produce earned $700 monthly.
After Fintech: Through Crowdfunding, the farmer raised $3,000 to install a small olive oil press. By processing the olives into higher-value olive oil and using Mobile Money for transactions, the farmer tapped into urban markets, enhancing revenue.
Income Change: The monthly income rose to $1,100, a 57% increase.

3.5.5 Example 5: Stability Achieved with Mobile Money
Before Fintech: A street vendor selling handmade crafts reported high income variability, with monthly earnings averaging $500 but often dropping to $300 during off-seasons.
After Fintech: By adopting Mobile Money, the vendor reduced transaction times and began accepting online orders. The improved accessibility stabilized the vendor's monthly income to $800, even during traditionally low-sales periods.
Income Change: The monthly average income increased by 60%, and stability improved with fewer income fluctuations.

3.5.6 Example 6: Bridging Financing Gaps via P2P Lending
Before Fintech: A micro-entrepreneur running a small printing shop earned $900 monthly but struggled to finance larger orders.
After Fintech: With a P2P loan of $3,500, the entrepreneur purchased advanced printing equipment. This enabled the business to fulfil bulk orders from locals.
Income Change: The monthly income grew to $1,300, reflecting a 44% increase.
These examples highlight the diverse applications of Ethical Fintech tools in different sectors. The income changes are achieved through:
- **Crowdfunding:** Providing access to capital for business expansion.
- **Mobile Money:** Enhancing transaction efficiency, reducing delays, and increasing accessibility.
- **P2P Lending**: Enabling the purchase of necessary equipment or inventory, leading to operational improvements and customer growth.

Each tool contributes uniquely to income growth, financial stability, and operational efficiency, empowering micro-entrepreneurs to overcome financial constraints and scale their businesses. Figure 4 illustrates the change in income after Fintech adoption for several examples, while Figure 5 illustrates the change in income after Fintech adoption for all questionnaire samples
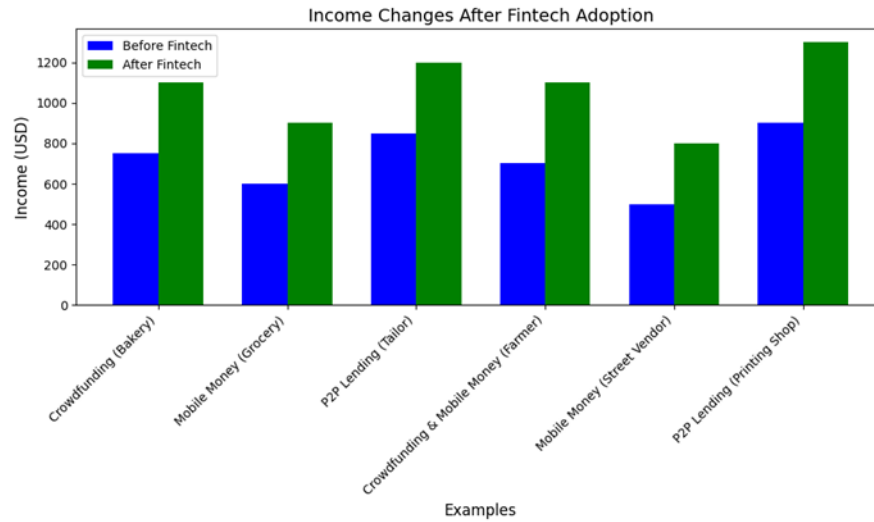

Figure 4: change in income after Fintech adoption for several examples

Figure 5: change in income after Fintech adoption for all questionnaire samples

4   Results and Analysis

4.1   Income Improvements

The data analysis indicates a substantial enhancement in the average monthly earnings of micro-entrepreneurs following the adoption of Ethical Fintech tools. The transition in income levels reflects the effectiveness of these tools in promoting financial growth:

   Before Fintech: Entrepreneurs reported an average income of $800/month.

   After Fintech: The average income increased to $1,000/month, demonstrating a

significant 25% improvement.

Notably, the income distribution revealed that a large proportion of entrepreneurs experienced an income increase in the range of $200–$300. These findings underscore the capacity of Fintech tools like Crowdfunding, Mobile Money, and P2P Lending to provide practical financial solutions, fostering both revenue generation and business expansion.

4.2 Income Stabilization

Beyond the increases in earnings, Fintech adoption contributed to stabilizing income flows. On a 1-to-5 stability scale, where 1 represents extreme variability and 5 indicates complete stability, participants reported an average rating of 4. This reflects the ability of Ethical Fintech tools to mitigate income volatility, enabling entrepreneurs to make more confident financial decisions.

4.3 Correlation Insights

The correlation analysis revealed varying impacts of Fintech tools on income changes:

- o **Crowdfunding**: Moderate positive correlation ($r = 0.52$), indicating its role in supporting business growth through access to capital.
- o **Mobile Money**: Moderate positive correlation ($r = 0.47$), emphasizing its efficiency in enabling seamless financial transactions.
- o **P2P Lending**: Weak negative correlation ($r = -0.18$), reflecting its mixed reception, likely influenced by trust deficits and platform reliability concerns.

These results reinforce the importance of Crowdfunding and Mobile Money as reliable financial instruments for micro-entrepreneurs, while also highlighting areas for improvement in P2P Lending.

4.3 Regression Analysis

The regression model examined the extent to which Fintech tools influence income changes. Key findings include:

- o **Crowdfunding**: Coefficient $\beta = 40.65$ (positive impact).
- o **Mobile Money**: Coefficient $\beta = 44.41$ (positive impact).
- o **P2P Lending:** Coefficient $\beta = -14.34$ (negative impact).
- o **Perceived Usefulness**: Coefficient $\beta = 19.23$ (positive but mild impact).

While the coefficients suggest that Crowdfunding and Mobile Money have significant positive influences on income, their statistical insignificance ($p > 0.05$) suggests that broader adoption and improved support systems are required to maximize their potential.

4.4 Practical Impacts and Examples

The study highlights several real-world achievements facilitated by Fintech tools:

- **Crowdfunding**: Enabled a home-based bakery to raise $5,000 for equipment, boosting monthly income by 47%.
- **Mobile Money**: Improved cash flow management for a rural grocery store, resulting in a 50% income increase.
- **P2P Lending**: Provided a tailor with a $2,000 loan to upgrade equipment, increasing income by 41%.
- **Combined Impact**: A farmer leveraged Crowdfunding and Mobile Money to diversify operations, achieving a 57% income rise.

These examples underscore the diverse applications of Fintech tools in enhancing operational efficiency, increasing customer outreach, and stabilizing financial outcomes for micro-entrepreneurs.

5　Conclusion

This study has explored the transformative role of Ethical Fintech tools—Crowdfunding, Mobile Money, and Peer-to-Peer (P2P) Lending—in enhancing the financial capacity and stability of micro-entrepreneurs in Jordan. The findings provide a comprehensive understanding of how these tools address critical barriers to financial inclusion and empower small businesses in both urban and rural contexts. [26-28]

The adoption of Crowdfunding platforms has demonstrated significant potential in providing accessible capital, enabling entrepreneurs to scale their operations effectively. Mobile Money has emerged as a key enabler of operational efficiency, offering seamless transaction capabilities and improving cash flow management. While P2P Lending exhibited mixed outcomes, it served as a crucial bridge for some entrepreneurs seeking financial resources, despite existing trust and regulatory challenges.

Quantitative analysis revealed a notable 25% average increase in income among participants following the adoption of Ethical Fintech tools, coupled with improved income stability. The moderate positive correlations observed with Crowdfunding and Mobile Money highlight their substantial contributions to business growth. However, the weaker results associated with P2P Lending point to the need for enhanced regulatory frameworks and increased trust-building efforts.

The study's findings underline the importance of tailoring Ethical Fintech solutions to meet the specific needs of micro-entrepreneurs. By fostering financial inclusivity, promoting trust, and addressing regulatory gaps, these tools can further solidify their role in driving economic resilience and sustainable development. Future research should delve deeper into overcoming the barriers associated with P2P Lending and explore comparative insights across different economies to optimize the deployment of Ethical Fintech solutions globally.

Ultimately, the results underscore the immense potential of Ethical Fintech to empower micro-entrepreneurs, strengthen economic participation, and pave the way for a more inclusive financial ecosystem in Jordan and beyond.

6　Recommendations

Based on the findings, the following actionable recommendations are proposed:

Policy Recommendations

a. Develop regulatory frameworks to enhance trust and transparency in P2P Lending platforms.

b. Launch targeted campaigns to increase awareness of Ethical Fintech tools among underserved populations.

Entrepreneurial Guidance

a. Encourage the integration of Mobile Money into daily transactions for improved financial efficiency.

b. Showcase successful Crowdfunding campaigns as benchmarks for aspiring

entreprencurs.

Future Research Directions

   a. Investigate the underlying barriers affecting P2P Lending adoption and explore solutions to overcome these challenges.

   b. Conduct comparative analyses across countries in the region to evaluate the scalability of Ethical Fintech models.

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