

Human-Centered Digital Financial Inclusion and Financial Well-Being among Indonesian Migrant Workers in Malaysia: A Pilot Study of Digital Access, Remittance Practices, and Financial Behavior

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ABSTRACT

Migrant workers routinely engage in cross-border financial transactions, yet their access to inclusive and trusted digital financial services remains uneven. This pilot study examines human-centered digital financial inclusion and financial well-being among Indonesian migrant workers in Malaysia by focusing on four dimensions: digital financial access, remittance practices, financial behavior, and financial well-being. A quantitative cross sectional design was applied using a structured online questionnaire distributed through WhatsApp with the support of the Chairperson of PCI Muslimat NU Malaysia during an international community service activity held at Sanggar Sungai Mulia 5, Malaysia, on April 3–5, 2026. From approximately 50 participants divided into several thematic groups, 13 respondents completed the questionnaire and were analyzed using descriptive statistics, reliability testing, correlation, regression, and moderation analysis. The findings show that remittance is a central financial activity, as all respondents sent money to Indonesia monthly and 76.9% used banks as their main remittance channel. However, digital financial inclusion remained moderate, with 61.5% of respondents having a Malaysian bank account and 61.5% never using e-wallets. Financial behavior and financial well-being were also moderate, indicating limited budgeting discipline, emergency fund readiness, and perceived financial stability. Regression results showed positive but statistically nonsignificant relationships among digital financial inclusion, remittance practices, financial behavior, and financial well-being. This study contributes by positioning migrant workers not only as remittance senders but also as active financial decision-makers facing digital access, trust, and behavioral constraints. Due to the small pilot sample, the findings should be interpreted as preliminary evidence for future large-scale research.

Keywords: *Digital financial inclusion, financial well-being, Indonesian migrant workers, remittance practices, financial behavior.*

1. INTRODUCTION

International labor migration has become an important livelihood strategy for many Indonesian workers seeking better income opportunities abroad, including in Malaysia. For migrant workers, financial decisions are not limited to personal consumption but also involve regular remittance transfers, family support, savings, debt management, and future-oriented financial planning. However, the increasing digitalization of financial services has created both opportunities and risks. On the one hand, digital banking, mobile money, and electronic wallets can reduce transaction costs, improve convenience, and expand access to formal financial services for underserved populations (Ozili, 2018; Suri & Jack, 2016). On the other hand, migrant workers may face barriers such as limited documentation, low trust in formal financial institutions, distance from banking facilities, limited digital skills, and exposure to online fraud.

Previous studies have shown that digital finance can support financial inclusion by enabling faster, cheaper, and more accessible financial transactions, particularly for individuals who are excluded from conventional banking services (Ozili, 2018). In the context of migration, remittances have also been linked to household welfare, consumption smoothing, and financial resilience (Dey et al., 2024). More recent research emphasizes that remittance practices in the digital era cannot be understood only as money transfers, but should also be viewed through the interaction between formal banking, mobile money, and digital financial behavior (Niankara & Traoret, 2023). Similarly, Mannan & Farhana (2023) found that remittance-receiving households may increase their use of digital financial services, suggesting a close relationship between migration, remittances, and digital financial inclusion.

Nevertheless, access to digital financial services does not automatically lead to better financial outcomes. Financial well-being depends not only on access, but also on how individuals manage their money, control spending, save, pay debts, compare transaction costs, and protect themselves from digital financial risks. Netemeyer et al. (2018) conceptualize perceived financial well-being as a combination of current money management stress and expected future financial security. This means that migrant workers' financial well-being should be assessed not only from income or remittance frequency, but also from their subjective sense of financial stability, control, satisfaction, and ability to handle unexpected expenses. Moreover, Choung et al. (2023) highlight that digital financial literacy is associated with financial well-being, especially through financial knowledge and the ability to protect oneself from digital fraud.

Despite the growing literature on digital finance and remittances, limited empirical attention has been given to Indonesian migrant workers in Malaysia using a human-centered perspective. Existing studies often focus on macroeconomic remittance flows, digital adoption, or general financial inclusion, while fewer studies examine how digital access, remittance practices, and day-to-day financial behavior are connected to migrant workers' financial well-being. Therefore, this study aims to explore human-centered digital financial inclusion among Indonesian migrant workers in Malaysia by examining four main dimensions: digital financial access, remittance practices, financial behavior, and financial well-being.

As a pilot study, this research does not intend to generalize its findings to all Indonesian migrant workers in Malaysia. Instead, it provides preliminary evidence and a measurement framework that can be refined for larger-scale research. The novelty of this study lies in positioning migrant workers not merely as remittance senders, but as active financial decision-makers who interact with digital financial systems under practical, social, and institutional constraints. The findings are expected to contribute to the development of more inclusive, safe, and behaviorally informed financial education and digital financial services for migrant workers.

2. METHODS

This study employed a quantitative, descriptive, and cross-sectional pilot study design to explore human-centered digital financial inclusion and financial well-being among Indonesian migrant workers in Malaysia. The pilot design was considered appropriate because the study aimed to obtain preliminary evidence regarding digital financial access, remittance practices, financial behavior, and financial well-being before developing a larger-scale study. The research was conducted in the context of an international community engagement activity entitled International Exposure – Community Service for Sharing Knowledge, Insights, and Dedication to Community Empowerment and Academic Collaboration with the theme Empowering Indonesian Migrant Workers in Malaysia through Financial Literacy, Business Entrepreneurship, and Sustainable Trade. The activity was held at Sanggar Sungai Mulia 5, Malaysia, on April 3–5, 2026, as documented in the certificate of participation issued by PCI Muslimat NU Malaysia. This study used a non-probability purposive sampling technique. Respondents were selected from Indonesian migrant workers who participated in the international community service activity in Malaysia and were relevant to the financial literacy and economic empowerment session. Out of approximately 50 participants, 13 respondents completed the questionnaire and were included in the pilot study.

The target population of this study consisted of Indonesian migrant workers who participated in the community service activity. The event was attended by approximately 50 participants. However, the participants were divided into several thematic groups, including economy, social issues, education, and health. Since the topic of this study focused on financial literacy and economic empowerment, the questionnaire was distributed mainly to participants who were relevant to the economic and financial literacy discussion. Therefore, this study used a non-probability purposive sampling approach. A total of 13 respondents completed the questionnaire and were included as the final sample. Although the sample size was limited, it was considered acceptable for a pilot study because the purpose was not to generalize the findings, but to test the relevance of the measurement framework and identify preliminary patterns among the respondents.

The data collection procedure was conducted chronologically in several stages. First, the researcher prepared a structured questionnaire based on four main constructs: digital financial inclusion/digital access, remittance practices, financial behavior, and financial well-being. Second, the questionnaire was converted into an online format to facilitate access and participation. Third, the questionnaire link was distributed through WhatsApp with the assistance of the Chairperson of PCI Muslimat NU Malaysia Group. WhatsApp was selected because it was the most accessible communication platform for participants and allowed respondents to complete the questionnaire flexibly using their mobile phones. Fourth, the researcher monitored the response process and ensured that only complete responses were used for analysis.

The instrument consisted of demographic questions and closed-ended items using a Likert scale to measure respondents' perceptions and behavior. Digital financial inclusion/digital access was measured through indicators such as ownership of bank accounts, use of digital wallets, internet access, and perceived safety of digital financial services. Remittance practices were measured through the frequency, channel, and consideration of cost and exchange rate in money transfers. Financial behavior was measured through budgeting, saving, emergency fund ownership, debt control, and price comparison. Financial well-being was measured through perceived financial stability, financial control, satisfaction with financial management, and the ability to manage unexpected expenses.

The collected data were screened, coded, and analyzed descriptively. Due to the small pilot sample, this study did not conduct complex inferential analysis such as regression or structural equation modeling. Instead, the analysis focused on frequencies, percentages, and response tendencies to evaluate the appropriateness of the constructs and identify early insights. The main limitation of this method lies in the small sample size and the use of purposive sampling, which limits the generalizability of the findings. However, the study provides a useful preliminary measurement framework for future research involving a larger and more representative sample of Indonesian migrant workers in Malaysia.

3. RESULTS AND DISCUSSIONS

3.1 Respondent Profile

A total of 13 valid responses were analyzed in this pilot study. The respondents were Indonesian migrant workers in Malaysia who participated in the community service activity related to financial literacy and migrant worker empowerment. Most respondents were female, representing 10 respondents or 76.9%, while male respondents accounted for 3 respondents or 23.1%. In terms of marital status, 11 respondents or 84.6% were married, one respondent was widowed, and one respondent was unmarried.

Regarding education, the respondents had diverse educational backgrounds: elementary school 7.7%, junior high school 30.8%, senior high school 30.8%, diploma 7.7%, bachelor's degree 7.7%, and postgraduate education 15.4%. Most respondents had worked in Malaysia for more than five years, including those who had worked for 18 and 32 years, representing 76.9% of the total sample. Monthly expenditure was generally low to moderate, with 61.5% spending less than RM1,500 per month and 38.5% spending between RM1,500 and RM3,000 per month.

In relation to financial access, 61.5% of respondents had a bank account in Malaysia, while 84.6% had a bank account in Indonesia. However, the use of electronic wallets remained low, as 61.5% of respondents reported that they had never used an e-wallet. All respondents reported sending money to Indonesia every month. The dominant remittance channel was the bank, used by 76.9% of respondents. The main reasons for selecting remittance channels were convenience, speed, and security.

Table 1. Respondent Characteristics

Characteristic	Category	Frequency	Percentage
Gender	Female	10	76.9%
	Male	3	23.1%
Marital status	Married	11	84.6%
	Widowed / unmarried	2	15.4%
Length of work in Malaysia	More than 5 years	10	76.9%
	Less than 5 years	3	23.1%
Monthly expenditure	Less than RM1,500	8	61.5%
	RM1,500– RM3,000	5	38.5%
Bank account in Malaysia	Yes	8	61.5%
Bank account in Indonesia	Yes	11	84.6%
Monthly remittance to Indonesia	Yes	13	100.0%
	Bank	10	76.9%

3.2 Measurement Validity and Reliability

The study used four main constructs: Digital Financial Inclusion / Digital Access, Remittance Practices, Financial Behavior, and Financial Well-Being. The construct scores were calculated using composite averages. Negative items were reverse-coded so that a higher score consistently indicated a better condition. For example, borrowing for consumptive needs, unplanned shopping, and financial problems disturbing work concentration were reverse-coded.

As this study involved only 13 respondents, the validity and reliability results should be interpreted as preliminary indicators rather than final psychometric evidence. Corrected item-total correlation was used as a pilot validity screening, while Cronbach's Alpha was used to assess internal consistency.

Table 2. Construct Validity and Reliability Test

Variable	Number of Items	Mean	SD	Cronbach's Alpha	Corrected Item-Total Correlation Range	Interpretation
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Digital Financial Inclusion / Digital Access	7	3.31	0.79	0.431	-0.165 to 0.540	Needs refinement
Remittance Practices	3	4.08	0.67	-0.139	-0.257 to 0.419	Not reliable as reflective construct
Financial Behavior	12	3.45	0.77	0.757	-0.215 to 0.733	Reliable
Financial Well-Being	4	3.04	0.91	0.515	0.043 to 0.671	Moderate, needs refinement

The reliability result shows that Financial Behavior had acceptable internal consistency with Cronbach's Alpha of 0.757. This indicates that the items measuring budgeting, saving, emergency fund ownership, debt control, and price comparison were relatively consistent in representing the construct. Meanwhile, Digital Financial Inclusion / Digital Access and Remittance Practices had low reliability coefficients. This result can be explained by the fact that both variables are more formative than reflective in nature. For example, having a bank account, using an e-wallet, having internet access, and feeling safe in digital transactions are different components of access and do not necessarily need to be highly correlated.

The Remittance Practices construct showed a very low reliability value because some indicators had limited variation. All respondents sent money to Indonesia monthly, and most used banks as their main remittance channel. Therefore, Remittance Practices should be interpreted mainly as a descriptive or formative variable in this pilot study rather than as a strong reflective scale.

3.3 Descriptive Statistics of Main Variables

The descriptive results show that Remittance Practices had the highest mean score, followed by Financial Behavior, Digital Financial Inclusion / Digital Access, and Financial Well-Being.

Table 3. Descriptive Statistics of Main Variables

Variable	Mean	Standard Deviation	Interpretation
Digital Financial Inclusion / Digital Access	3.31	0.79	Moderate

Remittance Practices	4.08	0.67	High
Financial Behavior	3.45	0.77	Moderate
Financial Well-Being	3.04	0.91	Moderate

The high score of Remittance Practices indicates that sending money to Indonesia is a routine and important financial activity among the respondents. However, the moderate score of Digital Financial Inclusion suggests that digital access is not yet optimal, especially because many respondents have never used e-wallet services and some still face barriers such as distance, documentation, cost, and lack of trust. The moderate score of Financial Behavior indicates that respondents already show positive financial habits, particularly in saving and comparing prices, but still need improvement in budgeting discipline, recording expenses, and maintaining emergency funds. Financial Well-Being also remained moderate, suggesting that although respondents regularly remit money, their perceived financial stability and sense of financial security are not yet fully strong.

3.4 Correlation among Main Variables

A Pearson correlation test was conducted to identify the direction and strength of the relationship among the main variables.

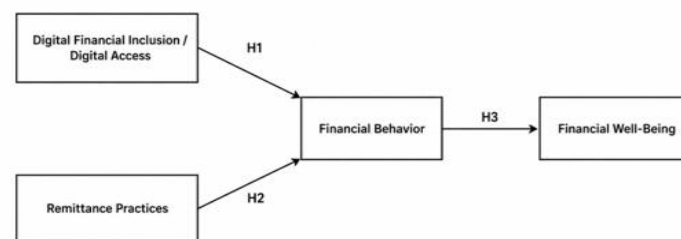
Table 4. Correlation among Main Variables

Relationship	Correlation Coefficient	p-value	Interpretation
Digital Financial Inclusion → Financial Behavior	0.464	0.110	Positive, not significant
Remittance Practices → Financial Behavior	0.402	0.174	Positive, not significant
Financial Behavior → Financial Well-Being	0.296	0.327	Positive, not significant
Digital Financial Inclusion →	0.456	0.118	Positive, not significant

Financial Well-Being			
Remittance Practices →			
Financial Well-Being	-0.051	0.869	Very weak, not significant

The results show positive relationships between Digital Financial Inclusion and Financial Behavior, Remittance Practices and Financial Behavior, and Financial Behavior and Financial Well-Being. However, none of these correlations were statistically significant at the 5% level. This is likely due to the small pilot sample size. Nevertheless, the direction of the relationships is consistent with the conceptual framework, where better digital financial access and remittance management may support better financial behavior, which in turn may improve financial well-being.

3.5 Regression Analysis Based on the Conceptual Framework



Regression analysis was conducted to test the relationships proposed in the research framework. The framework proposed three main hypotheses:

Figure 1. Framework of Management

H1: Digital Financial Inclusion / Digital Access positively affects Financial Behavior.

H2: Remittance Practices positively affect Financial Behavior.

H3: Financial Behavior positively affects Financial Well-Being.

Table 5. Regression Results of the Main Hypotheses

Hypothesis	Dependent Variable	Predictor	Coefficient	t-value	p-value	R ²	Decision
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H1	Financial Behavior	Digital Financial Inclusion / Digital Access	0.453	1.739	0.110	0.216	Not supported
H2	Financial Behavior	Remittance Practices	0.465	1.455	0.174	0.161	Not supported
H3	Financial Well-Being	Financial Behavior	0.348	1.027	0.327	0.087	Not supported

The regression results indicate that Digital Financial Inclusion / Digital Access had a positive coefficient toward Financial Behavior. This means that respondents with better access to bank accounts, e-wallets, stable internet, and safer digital transaction practices tended to demonstrate better financial behavior. However, the relationship was not statistically significant. Similarly, Remittance Practices had a positive coefficient toward Financial Behavior. This suggests that respondents who used more formal and considered remittance channels and compared exchange rates and fees tended to have better financial behavior. However, this relationship was also not significant.

Financial Behavior also had a positive coefficient toward Financial Well-Being. This indicates that better budgeting, saving, debt control, and emergency fund practices may contribute to better perceived financial well-being. However, the effect was not statistically significant due to the limited sample size. A multiple regression model was also conducted by entering Digital Financial Inclusion / Digital Access and Remittance Practices simultaneously as predictors of Financial Behavior.

Table 6. Multiple Regression Model Predicting Financial Behavior

Dependent Variable	Predictor	Coefficient	t-value	p-value
Financial Behavior	Digital Financial Inclusion / Digital Access	0.351	1.209	0.255
Financial Behavior	Remittance Practices	0.292	0.849	0.416
Model Summary	$R^2 = 0.268$	$F = 1.834$	$p = 0.210$	

The model explained 26.8% of the variance in Financial Behavior. Although the model was not statistically significant, the explanatory power is meaningful for a pilot study. It suggests that digital access and remittance practices may be relevant predictors to be retested using a larger sample. A full regression model was then conducted to predict Financial Well-Being using Digital Financial Inclusion / Digital Access, Remittance Practices, and Financial Behavior.

Table 7. Regression Model Predicting Financial Well-Being

Dependent Variable	Predictor	Coefficient	t-value	p-value
Financial Well-Being	Digital Financial Inclusion / Digital Access	0.581	1.545	0.157
Financial Well-Being	Remittance Practices	-0.464	-1.076	0.310
Financial Well-Being	Financial Behavior	0.233	0.610	0.557
Model Summary	$R^2 = 0.306$	$F = 1.322$	$p = 0.327$	

The full model explained 30.6% of the variance in Financial Well-Being. Digital Financial Inclusion had the strongest positive coefficient in this model, suggesting that access to financial services may be more directly related to financial well-being than remittance practices alone. However, all predictors remained statistically non-significant.

3.6 Moderation Analysis

A moderation analysis was conducted to examine whether Remittance Practices moderated the relationship between Digital Financial Inclusion / Digital Access and Financial Behavior. The variables were mean-centered before creating the interaction term.

Table 8. Moderation Test: Remittance Practices as Moderator

Dependent Variable	Predictor	Coefficient	t-value	p-value
Financial Behavior	Digital Financial Inclusion / Digital Access	0.582	1.987	0.078
Financial Behavior	Remittance Practices	0.064	0.190	0.853

Financial Behavior	Digital Financial Inclusion × Remittance Practices	-1.238	-1.788	0.107
Model Summary	$R^2 = 0.460$	$F = 2.557$	$p = 0.120$	

The moderation model explained 46.0% of the variance in Financial Behavior. However, the interaction between Digital Financial Inclusion and Remittance Practices was not statistically significant. Therefore, Remittance Practices did not significantly moderate the relationship between Digital Financial Inclusion and Financial Behavior.

Although not significant, the model suggests that digital access may have a stronger direct role in shaping financial behavior than remittance practices. The interaction coefficient was negative, indicating that the effect of digital financial inclusion on financial behavior may weaken when remittance practices are already high. However, this interpretation must be treated cautiously because of the very small sample size.

An additional moderation model was also tested by examining whether Digital Financial Inclusion moderated the relationship between Financial Behavior and Financial Well-Being.

Table 9. Moderation Test: Digital Financial Inclusion as Moderator

Dependent Variable	Predictor	Coefficient	t-value	p-value
Financial Well-Being	Financial Behavior	0.002	0.005	0.996
Financial Well-Being	Digital Financial Inclusion / Digital Access	0.339	0.851	0.417
Financial Well-Being	Financial Behavior × Digital Financial Inclusion	-0.362	-0.852	0.417

Model Summary $R^2 = 0.275$ $F = 1.138$ $p = 0.385$

The interaction effect was not significant. Therefore, Digital Financial Inclusion did not moderate the relationship between Financial Behavior and Financial Well-Being in this pilot sample.

3.7 Correlation between Respondent Characteristics and Main Variables

Spearman correlation was used to examine the relationship between respondent characteristics and the main variables.

Table 10. Spearman Correlation between Respondent Characteristics and Research Variables

Respondent Characteristic	Digital Financial Inclusion	Remittance Practices	Financial Behavior	Financial Well-Being
Age	-0.661*	-0.398	-0.379	-0.171
Gender, male = 1	0.736**	0.203	-0.024	0.098
Married = 1	0.029	-0.089	0.544	0.201
Education level	0.296	-0.094	-0.307	-0.286
Length of work in Malaysia	-0.725**	-0.216	0.009	-0.071
Monthly expenditure	-0.042	0.526	0.424	-0.234
Bank account in Malaysia	0.212	-0.241	0.233	0.616*
Bank account in Indonesia	0.143	-0.237	-0.515	0.172
E-wallet use	0.504	0.268	-0.049	-0.174

Note: * $p < 0.05$; ** $p < 0.01$.

The correlation results show that age was negatively and significantly related to Digital Financial Inclusion. This means that older respondents tended to have lower digital financial access. Length of work in Malaysia was also negatively related to Digital Financial Inclusion. This may indicate that long-term migrant workers, many of whom were older, were less familiar with e-wallets and digital financial services. Gender was positively correlated with Digital Financial Inclusion, meaning that male respondents showed higher digital access scores. However, this finding should be interpreted carefully because the sample consisted mostly of female respondents. Another important finding is that having a bank account in Malaysia was positively and significantly correlated with Financial Well-Being. This suggests

that access to formal banking services in the host country may support a stronger sense of financial security, control, and stability among Indonesian migrant workers.

3.8 Discussion

The findings indicate that Indonesian migrant workers in this pilot study actively engaged in remittance activities, with all respondents sending money to Indonesia every month. This confirms that remittance is a central financial activity for migrant workers. However, frequent remittance does not automatically translate into stronger financial well-being. The study found that Financial Well-Being remained at a moderate level, suggesting that migrant workers may still face financial pressure, limited emergency savings, and uncertainty in managing future financial needs.

The positive relationship between Digital Financial Inclusion and Financial Behavior supports the argument that access to digital and formal financial services can encourage better financial management. This finding is consistent with the view that digital finance can improve financial inclusion by reducing barriers to access, increasing convenience, and supporting more efficient transactions (Ozili, 2018). However, the effect was not statistically significant in this study, mainly due to the small sample size and variation in digital adoption. Many respondents had not used e-wallets, and some still faced barriers related to documentation, cost, distance, and trust.

The positive relationship between Remittance Practices and Financial Behavior also suggests that respondents who consider transaction fees, exchange rates, safety, and convenience may be more financially aware. This aligns with the argument that remittance behavior in the digital era should not be viewed only as money transfer, but also as part of broader financial decision-making (Niankara & Traoret, 2023). Nevertheless, because all respondents sent money monthly and most used banks, the variation in remittance practices was limited. This explains why Remittance Practices did not show a significant statistical effect.

The relationship between Financial Behavior and Financial Well-Being was positive but not significant. This direction is theoretically meaningful because budgeting, saving, debt control, and emergency fund ownership are expected to support financial stability and reduce financial stress. This is consistent with Netemeyer et al. (2018), who explain that financial well-being involves perceived financial control, current money management, and future financial security. In this study, however, financial behavior had not yet translated strongly into financial well-being. One possible explanation is that migrant workers' financial well-being is influenced not only by personal behavior but also by income level, family obligations, work conditions, legal status, and the amount of money remitted to families in Indonesia.

The moderation analysis showed that Remittance Practices did not significantly moderate the relationship between Digital Financial Inclusion and Financial Behavior. This means that digital access does not depend strongly on remittance practices in shaping financial behavior

within this pilot sample. However, the model explained 46.0% of the variance in Financial Behavior, which indicates that the interaction among digital access, remittance practices, and financial behavior deserves further examination in a larger sample.

Overall, the results support the relevance of the proposed framework, although the hypotheses were not statistically supported. The findings should be interpreted as preliminary evidence rather than final confirmation. The small sample size, low variation in remittance frequency, and limited reliability of some constructs indicate the need for instrument refinement and larger-scale data collection. Future research should involve a larger and more diverse sample of Indonesian migrant workers in Malaysia, include more objective measures of financial literacy, and distinguish between formal financial access, digital financial literacy, remittance behavior, and financial well-being more clearly.

4. CONCLUSION

This study examined human-centered digital financial inclusion and financial well-being among Indonesian migrant workers in Malaysia by focusing on digital financial access, remittance practices, financial behavior, and financial well-being. The findings indicate that remittance is a central financial activity among the respondents, as all participants reported sending money to Indonesia every month. Most respondents used formal banking channels for remittance, suggesting that formal financial services play an important role in supporting migrant workers' cross-border financial activities.

The descriptive findings show that remittance practices were relatively strong, while digital financial inclusion, financial behavior, and financial well-being were at moderate levels. This indicates that although Indonesian migrant workers regularly participate in financial transactions, their access to digital financial services, budgeting behavior, emergency fund ownership, and perceived financial stability still need improvement. The regression results showed positive relationships between digital financial inclusion and financial behavior, remittance practices and financial behavior, and financial behavior and financial well-being. However, these relationships were not statistically significant. Therefore, the proposed hypotheses were not fully supported in this pilot study. The study also found that formal financial access, particularly ownership of a bank account in Malaysia, was positively associated with financial well-being. This suggests that access to formal financial services in the host country may help migrant workers feel more financially secure and in control of their financial decisions. However, the low use of e-wallets and the presence of barriers such as documentation, distance, cost, and trust indicate that digital financial inclusion among migrant workers still requires further strengthening.

The main limitation of this study is the small sample size, consisting of only 13 respondents from approximately 50 participants in the community service activity. This limitation is primarily methodological and affects the statistical validity and generalizability of the findings. Because the sample was obtained through purposive sampling and the questionnaire was

distributed via WhatsApp, the results may not fully represent the broader population of Indonesian migrant workers in Malaysia. In addition, some variables, particularly remittance practices, had limited response variation because all respondents sent money monthly. This condition may reduce the ability of the statistical model to detect significant relationships among variables. Another limitation relates to the measurement framework. Some constructs, such as digital financial inclusion and remittance practices, may be more formative than reflective in nature. Therefore, low reliability values in these constructs do not necessarily indicate that the indicators are irrelevant, but rather that future research should refine the instrument by separating access, usage, trust, digital skill, and financial decision-making into clearer dimensions.

Based on these limitations, future researchers are encouraged to conduct a larger-scale study involving more diverse Indonesian migrant workers across different locations, occupations, gender groups, and length of stay in Malaysia. Future studies should also include more objective indicators of financial literacy, detailed remittance amounts, percentage of income remitted, digital fraud awareness, and household financial obligations in Indonesia. Methodologically, future research may apply regression analysis, mediation analysis, or structural equation modeling after obtaining an adequate sample size. Overall, this pilot study contributes preliminary evidence that financial inclusion for migrant workers should not only focus on access to banking and digital services, but also on how these services support better financial behavior and improve financial well-being. A human-centered approach is needed to design financial education, digital financial services, and remittance systems that are accessible, trusted, safe, and relevant to the real conditions of Indonesian migrant workers in Malaysia.

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