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TOWARD INCLUSIVE FINANCE: ANALYZING REFUGEES' ACCESS TO DIGITAL FINANCIAL SERVICES IN MALAYSIA

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ABSTRACT

This study examines the factors influencing both the adoption and preference for digital financial tools among refugees in Malaysia—a population largely excluded from formal financial systems due to legal and institutional barriers. Using data from 613 respondents collected through the Malaysia Financial Behaviour Survey (2022–2023) in collaboration with the United Nations High Commissioner for Refugees (UNHCR), the study employs binary logistic regression to analyze two key outcomes: (1) actual use of mobile phones for financial transactions, and (2) stated preference for formal digital tools such as e-wallets, bank accounts, and VISA/Mastercard. Results reveal that despite high smartphone ownership (89.1%), actual digital financial usage remains low. Use of financial apps like Merchantrade Money and Touch 'n Go, as well as access to formal domestic transfer channels, significantly increases the likelihood of adoption, whereas refugees from Myanmar are less likely to engage in digital financial activities. In contrast, preference for digital tools is influenced more by general digital engagement (e.g., use of Grab) than by financial behavior. These findings highlight a persistent gap between access and usage, underscoring the need for inclusive policies that recognize alternative identification (e.g., UNHCR cards), simplify onboarding processes, and strengthen digital financial literacy initiatives to enhance financial inclusion and economic participation among refugee communities in Malaysia.

Keywords: *Financial inclusion, logistic regression, likelihood, digital tools, financial behaviour, UNHCR.*

INTRODUCTION

Malaysia is home to a significant refugee and asylum seeker population, estimated at over 185,000 individuals as of 2024, the majority of whom are from Myanmar, including the Rohingya ethnic group, as well as refugees from countries such as Syria, Pakistan, Yemen, Somalia, and Afghanistan (UNHCR, 2024). Although Malaysia is not a signatory to the 1951 Refugee Convention, it permits refugees to reside temporarily while awaiting resettlement in a third country. However, refugees in Malaysia face legal, economic, and social vulnerabilities due to the lack of formal legal status. This undocumented status severely limits their access to formal employment, education, healthcare, and financial services (Kaur, 2022).

One critical area where refugees are underserved is in access to digital financial services, which include mobile banking, digital payments, and e-wallets. Digital finance has the potential to empower refugees by facilitating safer and more efficient transactions, enabling savings, and offering pathways for micro-entrepreneurship. However, in Malaysia, refugees are often excluded from these services due to the absence of legal identity documents recognized by financial institutions and mobile service providers (Yayasan Hasanah, 2021). Most banks and fintech platforms require Malaysian identity cards or passports with valid visas, which refugees typically do not possess. As a result, many refugees are forced to rely on informal cash-based systems, which are insecure and limit their economic opportunities.

Moreover, digital literacy and access to mobile devices or the internet further constrain refugees' ability to adopt digital finance tools (CZAJA, 2022b). Without targeted policies and inclusive digital infrastructure,

refugees continue to be excluded from the growing benefits of Malaysia's digital economy. Addressing these barriers—such as by recognizing UNHCR cards for simplified Know Your Customer (KYC) procedures or providing digital financial education—can help improve the economic resilience of refugee communities and support their socio-economic integration.

Digital finance refers to the integration of digital technologies into financial services, enabling more accessible, efficient, and inclusive financial transactions. It encompasses a wide range of tools and platforms, including mobile banking, digital payments, online lending, insurtech (digital insurance), and digital investment platforms. These technologies allow individuals and businesses to access financial services remotely and conveniently, often through smartphones or the internet, without the need to visit traditional brick-and-mortar institutions. Digital finance has been recognized as a key driver in promoting financial inclusion, particularly in developing countries where traditional banking infrastructure is limited. By lowering transaction costs and enhancing access to credit, savings, and insurance, digital finance can significantly contribute to economic development and poverty reduction (Ozili, 2018). Moreover, digital financial services have become increasingly important in times of crisis, such as during the COVID-19 pandemic, where digital channels enabled continued access to essential financial services while maintaining social distancing (UNSGSA, 2020).

Despite growing global attention to the role of digital finance in humanitarian contexts, a significant gap remains in understanding how and why refugees in Malaysia adopt or avoid digital financial tools. First, most existing studies in Malaysia focus on financial inclusion in general or on low-income Malaysians and migrant workers, with little to no emphasis on refugees, who face distinct legal and socio-economic constraints. Second, few empirical studies have specifically examined the determinants of digital finance usage among refugees, such as access to smartphones, digital skills, trust in service providers, or the role of social networks. Third, there is a lack of disaggregated data that considers variation across nationality, gender, age, and employment status among refugee populations, which could offer a more nuanced understanding of their financial behavior.

Furthermore, while some NGO and UNHCR reports mention barriers to digital inclusion, they do not systematically analyze the factors that contribute to the tendency to use digital financial tools. This study aims to fill that gap by providing evidence-based insights into the socio-demographic, technological, and other factors affecting digital finance adoption and preference for digital financial tools among refugees in Malaysia. By identifying these factors, the study aims to provide insights that can inform policies and interventions designed to promote financial inclusion and economic empowerment among refugee communities in Malaysia. 'Adoption' refers to the actual use or engagement with digital financial tools and services—reflecting behavioral outcomes influenced by access, ability, and opportunity. In contrast, 'preference' indicates the inclination or willingness to use such tools if given the choice, which perceptions of trust, convenience, security, or cultural norms may shape. By differentiating between these two concepts, the study can better capture both the practical and attitudinal dimensions of refugees' interaction with digital finance. This distinction enables policymakers and service providers to determine whether low adoption rates result from a lack of access and capacity (adoption barriers) or from deeper attitudinal and perceptual factors (preference barriers), thereby informing more targeted strategies for digital financial inclusion.

LITERATURE REVIEW

In recent years, digital financial services (DFS) have emerged as a critical tool for promoting financial inclusion among marginalized groups, including forcibly displaced populations such as refugees. These services—ranging from mobile wallets and agent banking to online banking and digital remittances—offer benefits such as convenience, security, and reduced transaction costs, making them particularly suitable for populations excluded from the formal financial sector (Demirgüç-Kunt et al., 2018). Evidence from humanitarian programs shows that when cash transfers and other forms of assistance are digitized, they can enhance efficiency, reduce leakage, and enable recipients to engage more effectively with financial systems (El-Zoghbi et al., 2017). When properly designed to meet the needs of displaced populations, DFS can serve as an entry point to formal financial systems, enabling refugees to save, transact, and build economic resilience (GSMA, 2019).

Globally, several studies have demonstrated that tailored digital financial systems can improve economic inclusion and self-reliance among refugees. The World Bank (2019) notes that linking mobile financial services to refugee livelihoods can facilitate remittances, savings, and access to microloans, thereby supporting both individual empowerment and broader economic participation. For example, mobile-based cash assistance in Jordan and Uganda has been linked to increased financial autonomy and reduced vulnerability to economic shocks (El-Zoghbi et al., 2017; World Bank, 2019). More recent analyses indicate that the expansion of DFS among refugee populations is heavily influenced by regulatory flexibility, particularly in Know-Your-Customer (KYC) requirements and digital identity recognition. GSMA (2019) emphasized that the acceptance of alternative identification, such as UNHCR cards, can significantly increase access to mobile-based financial services, while restrictive documentation policies continue to exclude millions of displaced persons from formal financial services.

At the same time, barriers such as low digital literacy, limited access to smartphones and internet connectivity, and linguistic constraints persist (CZAJA, 2022a). Moreover, trust in institutions and perceptions of security play a vital role in shaping attitudes toward mobile finance. Studies have shown that refugees are often wary of digital platforms due to fears of surveillance or data misuse, which can deter adoption even when access barriers are lowered (Wang & He, 2020). Empirical research on digital finance adoption among low-income populations has identified several key determinants, including income level, age, education, and smartphone ownership (Nguyen, 2021). While these findings are primarily drawn from studies on poor households or migrant workers, they provide important insights into the potential behavioral and socio-demographic factors that may also influence refugee populations. Meta-analyses by Neves et al. (2023) and Tay et al. (2022) further reinforce that digital literacy, trust, and perceived usefulness are among the strongest predictors of DFS adoption, suggesting the need for targeted interventions to build user confidence and competence.

In the Malaysian context, the financial inclusion of refugees remains highly constrained. Although Malaysia hosts a substantial refugee population—mainly from Myanmar and other conflict-affected regions—the country is not a signatory to the 1951 Refugee Convention, and refugees are not legally recognized under national law (UNHCR, 2024). As a result, they cannot open bank accounts or access most formal financial services, which typically require national identity documents (Kaur, 2022). Recent reports suggest that digital and mobile-based financial services, such as e-wallets and fintech platforms, have the potential to bridge this gap; however, their usage among refugee communities remains low due to legal, institutional, and infrastructural constraints (Yayasan Hasanah, 2021). According to CZAJA (2022a, 2022b), the primary barriers include a lack of recognized documentation, limited awareness of digital finance options, poor internet connectivity, and language difficulties. UNHCR (2024) findings echo these concerns, noting that while mobile technology ownership is growing, the absence of a clear regulatory framework for refugee banking continues to impede progress.

Despite these challenges, there are promising indications that Malaysia could leverage DFS to promote inclusion among refugees. GSMA (2019) and DAI (2022) highlight the potential of flexible digital identity frameworks and mobile agent networks to expand financial access, provided that policy adjustments are made to recognize alternative IDs such as UNHCR cards. Furthermore, as Neves et al. (2023) point out, institutional trust is a decisive factor in DFS adoption, underscoring the need for collaboration between government regulators, humanitarian agencies, and fintech providers to ensure privacy, transparency, and data protection. Yet, empirical research on refugees' actual use and perceptions of DFS in Malaysia remains limited. Existing studies and reports primarily describe policy barriers and potential opportunities but seldom offer quantitative insights into determinants of usage or the impact of digital financial inclusion on refugees' livelihoods. Consequently, there is a growing need for context-specific research that examines how socio-demographic characteristics, legal constraints, and technological access jointly influence the adoption of digital financial services among refugee communities in Malaysia.

Recent regional evidence from Southeast Asia further supports these observations. The ASEAN and ASEAN-adjacent literature highlights both the promise of DFS for forcibly displaced populations and the practical

constraints of regional regulatory fragmentation and digital infrastructure gaps (Mima, 2024). In Indonesia, UNHCR and related post-distribution monitoring show that digitized cash assistance programs improved timeliness and reduced in-person contact during 2024, but implementation faced operational challenges related to agent networks and KYC adaptations—underscoring the importance of agent liquidity, digital identity acceptance, and partnerships with local e-wallet providers (UNHCR, 2025; UNHCR Indonesia, 2025).

Empirical and programmatic studies in the region have also documented pilot efforts and multi-stakeholder agreements that indicate incremental policy shifts. For example, a 2024 MOU between a Malaysian e-wallet provider (TNG eWallet) and UNHCR signaled concrete steps toward operational collaboration to improve refugee access to e-wallet services in Malaysia, demonstrating how public–private partnerships can create pathways for inclusion even without formal changes in national ID law. However, deeper legal recognition and more explicit KYC guidance remain necessary to scale such pilots (Refugee Malaysia, 2024).

At the regional policy level, the Alliance for Financial Inclusion (AFI) and the United Nations Development Programme (UNDP) have produced guidance and feasibility work (2023–2024) on enabling access to finance for forcibly displaced persons and migrant-led MSMEs in the Asia-Pacific region—emphasizing regulatory sandboxes, tiered KYC, and data protection safeguards as practical measures to expand DFS access while managing financial integrity risks (AFI, 2023; UNDP, 2024). These policy reports provide a framework that can be adapted to national contexts, such as Malaysia, where UNHCR (2025) operational reviews also highlight the need for harmonized policies across mobile operators, banks, and humanitarian actors to enable scale.

Recent academic and practitioner literature has begun to quantify how institutional readiness—such as financial service provider technology readiness, agent network strength, and humanitarian organizational practices—mediates the effectiveness of digital cash programs, pointing to technology readiness and organizational culture as mediators of uptake and user satisfaction (Rahman et al., 2024). These findings suggest that improving provider readiness and establishing clear operational protocols (e.g., client registration, data protection, and grievance mechanisms) are as necessary as legal reforms to increase adoption among refugees.

Having said this, robust empirical studies that examine refugees' DFS adoption and preferences across Southeast Asia remain limited. Country case studies, UNHCR operational reports, and ASEAN-regional policy papers offer complementary evidence: program pilots and MOUs show pathways forward (e.g., public–private partnerships and agent networks), while monitoring reports and feasibility studies flag implementation frictions (KYC, agent liquidity, language and digital literacy, and trust). Taken together, these regional studies reinforce the need for mixed-method, disaggregated research in Malaysia that measures not only access and usage (adoption) but also attitudes and willingness (preference), and that evaluates how regulatory and operational enablers interact with socio-demographic constraints to shape digital financial inclusion outcomes for refugees.

Overall, while international evidence demonstrates that digital financial services can play a transformative role in promoting financial inclusion and resilience among displaced populations, refugees in Malaysia continue to face significant barriers that prevent them from benefiting from these innovations. Strengthening digital literacy, expanding acceptance of alternative identification, and enhancing collaboration between stakeholders are essential for closing the inclusion gap. Further empirical studies are necessary to understand the nuanced challenges and opportunities in the Malaysian context and to inform targeted policy interventions that can foster inclusive, secure, and sustainable digital financial ecosystems for refugees.

METHODOLOGY

The data for this study were sourced from the Malaysia Financial Behaviour Survey (2022–2023) in collaboration with the United Nations High Commissioner for Refugees (UNHCR). The survey focused on a purposively selected sample of 613 refugees currently residing in Malaysia, representing diverse backgrounds and nationalities. The data are cross-sectional in nature, capturing a detailed snapshot of the participants' financial behaviors, attitudes, and levels of digital financial literacy at a specific point in

time. This methodological approach is particularly valuable for examining the present landscape of financial inclusion and digital finance engagement among refugees.

To examine the factors influencing the likelihood that refugees in Malaysia use digital financial tools, this study employs an econometric approach based on the Logit model. The Logit model is particularly well-suited for this analysis as the dependent variable is binary in nature, indicating whether a respondent uses digital financial tools (coded as 1) or does not (coded as 0). Logistic regression is appropriate in this context, as it estimates the probability of an event occurring and ensures that predicted values remain between 0 and 1. In contrast, linear regression is unsuitable for dichotomous outcomes. It also allows the inclusion of both categorical and continuous independent variables, such as gender, age, and app usage. Furthermore, logistic regression provides results in terms of odds ratios, making it easier to interpret the likelihood of adoption or preference for digital finance based on different factors. Overall, this model is well-suited for identifying the determinants that influence refugees' digital financial behavior.

The Logit model, a form of non-linear regression, is based on the logistic cumulative distribution function. It maps any linear combination of the independent variables into a range of 0 to 1, making it ideal for modeling probabilities. The probability that an individual respondent uses digital financial tools can be expressed as:

$$\Pr(Y=1|X_1,X_2\ldots)=F\left(\beta_0+\beta_1X_1+\beta_2X_2+\ldots+\beta_kX_k\right)$$

$$=\frac{1}{1+e^{-(\beta_0+\beta_1X_1+\beta_2X_2+\ldots+\beta_kX_k)}} \quad (1)$$

Where:

Y is the binary outcome variable (1 = uses digital financial tools, 0 = does not), X_1, X_2,...,X_k represent the explanatory variables, such as motivational factors, demographic characteristics, and control variables, β_0, β_1,...,β_k are the parameters to be estimated.

For ease of interpretation, the model is often expressed in its log-odds (logit) form:

$$L_i=\ln\left[\frac{P_i}{1-P_i}\right]=\beta_0+\sum_{i=1}^{n}\beta_i\,(X_i)+\varepsilon_i \quad (2)$$

Here, *Li* denotes the log of the odds that respondent *i* uses digital financial tools, and P_i is the predicted probability. The coefficient β_j represents the change in the log-odds associated with a one-unit change in the *j*-th explanatory variable. To interpret the results in terms of odds ratios, the exponential of the coefficients ($e^{\beta j}$) is taken. Subtracting 1 and multiplying by 100 yields the percentage change in the odds of using digital financial tools resulting from a unit change in the corresponding independent variable.

The study estimated two binary logistic models:

Model 1: Adoption Model

Dependent variable: $Y_1 = 1$ if the refugee used a mobile phone for payment, purchase, or transfer in the past 12 months; $Y_1 = 0$ otherwise.

Independent Variables:
Gender (dummy), Age group (dummy for 18–29 years old), Country of origin (dummy for Myanmar), Use of Touch 'n Go app (dummy), Use of Merchantrade Money app (dummy), Use of Grab app (dummy), Use of Google search/browser app (dummy), use of formal method to send/receive money within Malaysia (dummy), and use of formal method to send/receive money outside Malaysia (dummy)

The logit equation for Model 1 is:

$$\ln\left[\frac{P_1}{1-P_1}\right]=\beta_0+\beta_1(\text{Gender})+\beta_2(\text{Age})+\ldots\ldots+\varepsilon \quad (3)$$

where P_1 is the probability that the respondent used digital financial tools in the past 12 months.

Model 2: Preference Model

Dependent variable: $Y_2 = 1$ if the refugee prefers to use VISA/Mastercard, bank account, or e-wallet (if easily registered); $Y_2 = 0$ otherwise.

Independent variables:
Gender (dummy), Age group (dummy for 18–29 years old), country of origin (dummy for Myanmar), Use of Touch n Go app (dummy), Use of Merchantrade Money app (dummy), Use of Grab app (dummy), Use of Google search/browser app (dummy), use of formal method to send/receive money within Malaysia (dummy), and use of formal method to send/receive money outside Malaysia (dummy)

or Model 2 is:

$$\ln\left[\frac{P_2}{1-P_2}\right] = \beta_0 + \beta_1(\text{Gender}) + \beta_2(\text{Age}) + \ldots\ldots + \varepsilon \quad (4)$$

where P_2 is the probability that the respondent prefers digital financial tools.

This modeling approach facilitates the identification of key drivers behind the adoption of digital financial tools among refugees—such as age, gender, education level, smartphone access, and others. The goodness-of-fit of the model is assessed using multiple criteria: (1) The "fraction correctly predicted" indicates the proportion of observations for which the model's predicted classification (use or non-use of digital financial tools) matches the actual outcomes, and (2) Pearson chi-square-type tests—specifically the Hosmer-Lemeshow test (Hosmer, 1989) and tests proposed by Andrews (1988a, 1988b) — are employed to evaluate how well the model fits the observed data. This robust statistical framework ensures reliable estimation and interpretation of the factors that shape digital financial behavior among the refugee population in Malaysia.

FINDINGS AND DISCUSSION

The demographic profile of the respondents reveals that the sample is slightly male-dominated, with 57.3% identifying as male and 42.6% as female, with one missing data. The majority of the refugees, 84.3%, originate from Myanmar, which aligns with the known dominance of Rohingya and other displaced ethnic groups from Myanmar in Malaysia's refugee population. The remaining 15.7% are from different countries, including Syria, Somalia, Pakistan, and Yemen. Age-wise, the refugee population is relatively young, with 48.0% aged between 18 and 29 years, followed by 33.1% in the 30–39 age group. Smaller proportions were reported among older age categories: 11.3% (40–49 years), 6.4% (50–59 years), and only 1.1% were above 60 years of age. This age distribution suggests a significant presence of economically active individuals who could potentially benefit from digital financial services if access barriers were addressed.

In terms of digital access, the data show that 89.1% of respondents own smartphones, indicating high potential for mobile-based financial service outreach. Despite this encouraging level of smartphone ownership, actual usage of economic and utility applications remains surprisingly low. Only 2.8% of respondents reported using the Touch n Go eWallet app, and 5.1% used Merchantrade Money—both of which are commonly used digital financial tools in Malaysia. Interestingly, broader digital usage is evident in the use of apps like Google search or browsers (33.1%) and Grab (39.2%), reflecting more general engagement with mobile technology, possibly for work or transportation purposes.

The study also highlights the continued reliance on informal financial practices among refugees. An overwhelming 94.8% of respondents reported receiving money from employers or transferring money within Malaysia using cash or informal methods, while only 1.8% used formal channels such as banks or e-wallets. Similarly, for cross-border remittances, 89.7% of refugees used informal channels, while only 9.6% accessed formal financial services. This heavy dependence on informal systems may expose refugees to economic insecurity, loss, or exploitation, while also reflecting the regulatory and documentation barriers they face in accessing formal financial institutions.

Furthermore, only 7.7% of respondents reported using their mobile phones in the past 12 months to make payments or transfer money, indicating a significant gap between access to digital devices and the actual usage of digital financial tools. However, when asked about future preferences, 37.2% of the refugees expressed a willingness to use formal financial services, such as VISA/Mastercard, bank accounts, or e-wallets, if the registration process were simple and accessible. This reveals a latent demand for digital financial services, suggesting that simplifying onboarding processes—such as allowing registration with UNHCR cards—could help bridge the gap in financial inclusion.

Thus, while smartphone penetration among refugees in Malaysia is relatively high, the actual usage of digital financial tools remains critically low. This disconnect can be attributed to multiple factors, including legal status, inadequate identification, digital literacy, and language barriers. Nevertheless, the willingness of over one-third of respondents to adopt digital financial tools underlines the potential for targeted policy and fintech solutions to foster financial inclusion among this marginalized population. These insights are crucial

for designing inclusive financial systems that cater to the needs and constraints of refugee communities.

Furthermore, the current study also attempts to investigate factors that might contribute to the likelihood (probability) of using *digital financial tools* among respondents. The models adopted are the Binary Logistic, where the dependent variable has only two categories, one and zero (binary number). Data for dependent variables are collected from the responses to two questions:

1. In the past 12 months, have you used a mobile phone to make payments, buy things, or send or receive money? (yes=1, no=0).
2. How would you rate your preference for using VISA/ Mastercard/ bank account/ e-wallet, or just cash? If I can easily register for an account, I would prefer to use VISA/Mastercard/ bank account/ e-wallet (yes=1, no=0)

The second dependent variable, based on question 2, is used to check the robustness of the results obtained. In logistic regression, predictors/independent variables can be either categorical or continuous, or a combination of both. The predictors are those variables listed in Table 1: demographic variables such as gender, age, country of origin, and other controlled variables such as owning a phone, using apps such as Touch N Go, Grab, Merchantrade Money, Google search, and methods of money payment received/transferred within Malaysia and outside Malaysia. In most cases, the independent variables are transformed into dummy variables, especially for categorical data.

Table 1 Statistics on demographic information and variables

Variable	Category	Frequency	Percent
Gender	Male	351	57.3
	Female	261	42.6
	Missing data	1	0.2
Country of Origin	Myanmar	517	84.3
	Others	96	15.7
Age	18-29 years old	294	48.0
	30-39 years old	203	33.1
	40-49 years old	69	11.3
	50-59 years old	39	6.4
	>60 years old	7	1.1
Own a smartphone	Yes	546	89.1
	No	64	10.4
Use apps – Touch N Go	Yes	17	2.8
	No	596	97.2
Use apps - Merchantrade Money	Yes	31	5.1
	No	515	84.0
Use apps - Google search / browser	Yes	203	33.1
	No	410	66.9
Use apps - Grab	Yes	240	39.2
	No	373	60.8
Method usually used to receive money from your employer or transfer money to friends and relative within Malaysia	Formal (bank account/ e-wallet)	11	1.8
	Informal (cash)	581	94.8
Method usually used to send or receive money from outside Malaysia	Formal (bank account/ e-wallet)	59	9.6
	Informal (cash)	550	89.7
In the past 12 months, have you use a mobile phone to make payments, to buy thing, or to send or receive money?	Yes	47	7.7
	No	566	92.3
If I can easily register for an account, I would prefer to use VISA/Mastercard/ bank account/ e-wallet	Yes	228	37.2
	No	385	62.8

As shown in Table 2, two regressions (1 and 2) were developed with different dependent variables for the use of digital financial tools. Regression 1 focuses on the use of mobile phones for payments, buying things, or sending or receiving money, and Regression 2 is on the respondents' preference for using VISA/Mastercard/ bank account/ e-wallet.

The findings from the binary logistic regression models offer valuable insights into the factors influencing the adoption and preference for digital financial tools among refugees in Malaysia. Two separate regressions were conducted, each with different dependent variables. The first regression assessed the likelihood of having used a mobile phone in the past 12 months to make payments, purchase goods, or send and receive money. The second regression examined the respondents' preference for using formal financial services, such as VISA, Mastercard, bank accounts, or e-wallets, if registration were made simple.

In Regression 1, several variables emerged as significant predictors of digital financial behavior. Refugees from Myanmar were found to be significantly less likely to

Table 2 Results of logit regressions

Independent variables	Binary logistic Dependent variables: Use a mobile phone to make payments, to buy thing, or to send or receive money in the past 12 months (1)		Prefer to use VISA/ Mastercard/ bank account/ e-wallet (2)	
	B	Exp(B)	B	Exp(B)
Constant	-2.563*** (0.544)	0.077	-1.277 (0.300)	0.279
Dummy GENDER	0.463 (0.441)	1.589	0.298 (0.197)	1.347
Dummy AGE (18-29)	-0.037 (0.404)	0.963	0.255 (0.189)	1.291
Dummy COUNTRY OF ORIGIN_MYANMAR	-0.997** (0.462)	0.369	0.057 (0.270)	1.058
Dummy USE APP- TNG	1.414** (0.732)	4.112	0.572 (0.541)	1.772
Dummy USE APP - MERCHANTRADE MONEY	3.101*** (0.508)	22.231	0.347 (0.417)	1.414
Dummy USE APP- GRAB	-0.422 (0.447)	0.656	1.016*** (0.199)	2.762
Dummy USE APP – GOOGLE SEARCH	-0.150 (0.449)	0.861	-0.085 (0.207)	0.918
Dummy SEND/RECEIVE MONEY OUTSIDE MSIA-FORMAL	0.451 (0.584)	1.570	0.203 (0.314)	1.225
Dummy SEND/RECEIVE MONEY WITHIN MSIA-FORMAL	3.132*** (0.791)	22.919	-0.276 (0.714)	0.758
	Diagnostic tests			
% correct classification	93.7 (from 92.5)		63.1 (from 60.4)	
Omnibus Chi-square stat.	76.58***		38.97***	
Hosmer & Lemeshow Test stat..	4.969		15.80**	
Cox &Snell R-square	0.137		0.072	
Negelkerke R-square	0.332		0.098	

Notes:
1. Standard errors are in parentheses
2. ***statistically significant at the 1% level; **5% level; *10% level.
3. Dummy OWN SMART PHONE is automatically excluded during the regression process. This probably because it is highly collinear with other variables or shows too little variation to contribute meaningful insight.

use mobile phones for financial transactions compared to refugees from other countries (B = -0.997, $p < 0.05$). This suggests that Myanmar-origin refugees, who constitute the majority of the sample, may face unique barriers to accessing digital finance—such as lower education levels, limited language skills, or cultural unfamiliarity with digital platforms. This finding is consistent with Yayasan Hasanah (2021), which reported that Rohingya refugees in Malaysia often experience higher levels of digital exclusion due to structural and social vulnerabilities.

The use of specific mobile applications was also a strong predictor of digital financial engagement. Refugees who used the Merchantrade Money app were over 22 times more likely to have engaged in mobile financial transactions (B = 3.101, $p < 0.01$). Similarly, the use of the Touch 'n Go eWallet was associated with a fourfold increase in the likelihood of digital financial activity (B = 1.414, $p < 0.05$). These results highlight the critical role of FinTech platforms that are tailored to migrant or low-income users. As noted by GSMA (2019), digital finance adoption increases significantly when platforms are accessible, user-friendly, and relevant to the needs of displaced or undocumented populations.

Furthermore, refugees who received or sent money within Malaysia through formal financial channels, such as banks or e-wallets, were also significantly more likely to use mobile phones for financial transactions (beta = 3.132, $p < 0.01$). This reinforces the idea that access to and trust in formal financial systems have a significant influence on digital engagement. This aligns with Demirgüç-Kunt et al. (2018), who emphasized that institutional access is one of the strongest enablers of financial inclusion in underserved communities.

Conversely, variables such as gender, age, and the use of general-purpose apps like Google or Grab were not significant predictors in Regression 1. This suggests that basic demographic characteristics and generic app usage do not necessarily translate into digital financial participation unless they are coupled with specific financial tools or formal channels.

In Regression 2, which used preference for formal financial tools as the dependent variable, fewer variables were found to be significant. The only statistically significant predictor was the use of the Grab apps (beta = 1.016, $p < 0.01$), with users being nearly 2.8 times more likely to prefer digital financial services. This may reflect greater digital savviness or comfort with app-based services among Grab users. However, other variables such as the use of financial apps (e.g., Touch 'n Go, Merchantrade Money), country of origin, or transfer method did not significantly affect respondents' stated preferences. The weaker explanatory power of this model, as indicated by the lower Nagelkerke R^2 (0.098), suggests that preference alone does not reliably predict digital financial behavior and is likely influenced by broader perceptions, aspirations, or contextual factors not captured in the survey.

These findings align with those of El-Zoghbi et al. (2017), who argued that access alone is insufficient; digital finance must be accompanied by trust, literacy, and perceived relevance to drive usage. They also echo Nguyen (2021), who found that actual use of digital finance in low-income populations was more strongly driven by behavioral and experiential factors rather than by simple preference or awareness.

In general, the regression analysis reveals that actual usage of digital financial tools among refugees in Malaysia is strongly influenced by access to financial-specific mobile applications and formal financial infrastructure. In contrast, general digital familiarity (e.g., app use) and stated preferences play a more limited role. The significant digital divide among Myanmar refugees, despite relatively high smartphone ownership, underscores the importance of targeted interventions that address both technological access and socio-cultural barriers. These findings suggest that policy efforts and financial inclusion programs should not only focus on expanding infrastructure but also on enhancing digital literacy, simplifying onboarding processes (e.g., allowing UNHCR card registration), and promoting trust in formal financial systems.

CONCLUSION

This study investigates the factors influencing the adoption and preference for digital financial tools among refugees in Malaysia using data from the Malaysia Financial Behaviour Survey (2022–2023) conducted in collaboration with UNHCR. Employing binary logistic regression, the analysis examines both

actual usage and stated preferences for digital financial services, including e-wallets, mobile payments, and formal banking. The findings indicate that although smartphone ownership among refugees is relatively high, actual engagement with digital financial services remains low. Key determinants of usage include access to specific financial applications such as Merchantrade Money and Touch 'n Go, linkage to formal financial channels, and demographic factors, particularly country of origin. Refugees from Myanmar, who constitute the majority of the sample, are significantly less likely to adopt digital finance, reflecting persistent barriers related to documentation, literacy, and trust. The study contributes to the financial inclusion literature by highlighting the structural and contextual challenges refugees face in accessing digital finance. From a policy perspective, the findings underscore the need for inclusive digital finance frameworks that recognize alternative forms of identification, such as UNHCR cards, within KYC requirements. In addition, targeted digital financial literacy initiatives and culturally sensitive FinTech design could enhance adoption. While limited by cross-sectional and self-reported data, the study suggests future research should adopt longitudinal and qualitative approaches to better understand trust, behavioral change, and institutional barriers. Overall, unlocking the potential of digital finance for refugees requires coordinated efforts among policymakers, humanitarian agencies, financial institutions, and technology providers.

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