

Cryptocurrency as a Gateway for Cross-Border Mobile Money Services: Evidence from Soft Deal Trading Ltd, Buea, Cameroon

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ABSTRACT

This study examines the implications of three major cryptocurrencies (Bitcoin, Ethereum, and Tether) for cross-border mobile money services, using primary data from 69 staff and active cryptocurrency users at Soft Deal Trading Ltd in Buea, Cameroon. Structured questionnaires were administered and a multiple linear regression model was estimated. The model explains 29.2% of the adjusted variance in mobile money service outcomes (adjusted $R^2 = 0.292$; $F = 10.344$; $p < 0.001$). Bitcoin exerts a significant positive effect ($\beta = 0.515$; $p < 0.001$), consistent with its deep market penetration and user recognition. Tether likewise has a significant positive effect ($\beta = 0.412$; $p = 0.001$), driven by its price stability, minimal inter-wallet transfer charges, and broad cross-border acceptability. Ethereum, by contrast, carries a significant negative effect ($\beta = -0.436$; $p = 0.002$), attributable to low user familiarity and prohibitively high network gas fees. The findings suggest that Bitcoin and Tether represent viable complements to conventional mobile money for cross-border payments in the Cameroonian context, while Ethereum's adoption barriers must be addressed before it can contribute positively to such services.

Keywords: Cross-border transactions; Bitcoin; Ethereum; Tether; Cameroon

JEL: F36, G24, O55

INTRODUCTION

Mobile money has transformed retail financial services in sub-Saharan Africa since M-PESA's launch in Kenya in 2007. Over the following decade the model spread rapidly, to Uganda, Tanzania, South Africa, Côte d'Ivoire, and eventually Cameroon, where MTN and Orange officially introduced their services in 2012. The appeal was straightforward: millions of people who could not open a formal bank account could nonetheless send, receive, and store money using a basic mobile handset. By removing the branch as the point of contact, mobile money brought formal financial services to rural and peri-urban populations for the first time.

Cross-border transfers, however, remain a weak link. Domestic mobile money networks operate within regulatory and technical perimeters that are difficult to extend across national borders. International transactions attract heavy fees, pass through multiple intermediary systems, and can take days to settle. For a small trading firm in Buea whose business involves regular remittances to or from suppliers and clients across the Economic Community of Central African States (ECCAS) region, these frictions are commercially significant.

Cryptocurrency offers a potential alternative channel. Decentralised by design, cryptocurrency networks have no regard for national borders, operate continuously, and can in principle settle transactions within minutes at a fraction of the cost of conventional wire transfers. Bitcoin, the oldest and most widely recognised cryptocurrency, has accumulated the broadest user base. Tether, a dollar-pegged stablecoin, avoids the price volatility that makes Bitcoin difficult to use as a unit of account. Ethereum, the platform best known for smart contracts, offers programmability but has been associated with high network fees during periods of congestion. It is evident that cross-border mobile money transfers in sub-Saharan Africa face persistent frictions, high



transaction costs, limited interoperability, and restricted geographic reach, that cryptocurrency networks may help alleviate.

Despite the growing literature on both mobile money and cryptocurrency in Africa, evidence on how specific cryptocurrencies interact with cross-border mobile money services in the Cameroonian context is virtually absent. This study fills that gap by examining the implications of Bitcoin, Ethereum, and Tether for cross-border mobile money services at Soft Deal Trading Ltd in Buea. Three specific objectives guide the inquiry:

- To analyse the influence of Bitcoin on cross-border mobile money services
- To ascertain the effect of Ethereum on cross-border mobile money services
- To assess the extent to which Tether facilitates cross-border mobile money services.

The paper is organised as follows. Section 2 reviews the relevant theoretical and empirical literature. Section 3 describes the research design, sampling, and econometric approach. Section 4 presents and interprets the results. Section 5 concludes with policy and managerial recommendations.

LITERATURE REVIEW

Theoretical Framework

Two bodies of theory frame this study. The first is the Neoclassical Theory of Money, which holds that money is neutral with respect to real economic variables in the long run, that changes in the money supply affect only the absolute price level, not output or employment. The relevance here lies in the monetary transmission mechanism: policy-induced changes in nominal money stock ripple through interest rates, asset prices, bank lending, and ultimately aggregate demand and prices. For cryptocurrency, the parallel is the channel through which changes in the availability and cost of a new payment instrument affect real transaction volumes. If cryptocurrencies substantially reduce the cost of cross-border transfers, the theory predicts a real expansion in the volume of such transactions, not merely a redenomination of existing ones.

The second framework is the Technology Acceptance Model (TAM), developed by Davis (1989) and drawing on earlier work by Fishbein and Ajzen (1975). TAM holds that a new technology's adoption is jointly determined by perceived usefulness and perceived ease of use. Applied here, Bitcoin's deep brand recognition and Tether's price stability reduce perceived risk and raise perceived usefulness, predicting higher adoption for both. Ethereum's high gas fees and low familiarity among the study population elevate perceived complexity, predicting lower adoption, a prediction borne out by the empirical results.

Origin of Mobile Money in Africa

Mobile money emerged in Kenya in 2007 when Safaricom, in partnership with Vodafone, launched M-PESA, an application embedded on SIM cards that allowed customers to store, transfer, and withdraw cash without a bank account (Communications Commission of Kenya, 2013). The model proved scalable. By 2012 comparable services had launched in Uganda (MTN Mobile Money, 2009), Tanzania (Airtel's Me2U, 2005, and Vodacom M-PESA), South Africa (MTN Mobile Money, 2005), and Côte d'Ivoire, where Orange Money and MTN Mobile Money competed head-to-head following their respective launches in 2008 and 2009 (CGAP, 2012; GSMA, 2014). In each market, regulatory frameworks required mobile operators to partner with licensed banks, though end users needed no bank account to transact.

Cameroon followed in 2011–2012, driven by the same underlying condition: a large unbanked population with high mobile penetration but limited formal financial infrastructure. MTN Cameroon and Orange Cameroon pioneered the concept locally, and subsequent platform upgrades, the rollout of 3G in 2015 and 4G shortly thereafter, expanded network capacity. Mobile money quickly became the dominant instrument for domestic peer-to-peer transfers, bill payment, and merchant settlement.

Cross-border mobile money, however, has grown more slowly. Interoperability between national networks requires bilateral agreements between operators, regulatory harmonisation across jurisdictions, and currency conversion infrastructure, none of which is easily or cheaply assembled. The result is that cross-border transfers remain more expensive, slower, and less reliable than domestic ones.

Features of Cryptocurrency

Bitcoin (BTC), introduced in 2009 following Satoshi Nakamoto's 2008 white paper, operates through a proof-of-work consensus mechanism in which computing power is used to validate transactions and add new blocks to its blockchain. It was the first decentralised digital currency and retains the largest market capitalisation and global user base of any cryptocurrency (Li & Wang, 2016).

Ethereum (ETH), launched in July 2015, was conceived as a general-purpose programmable blockchain capable of running smart contracts, self-executing agreements that activate when predefined conditions are met. Its programmability made it the platform of choice for decentralised applications, but the resulting network congestion has periodically pushed transaction fees (gas fees) to levels that make small-value transfers uneconomical (Mukhopadhyay et al., 2016).

Tether (USDT), launched in 2014, is a stablecoin pegged 1:1 to the US dollar and backed by dollar-denominated reserves. Its price stability eliminates the exchange rate risk that makes Bitcoin and Ethereum difficult to use as payment instruments in commercial transactions. Running on multiple blockchains including Ethereum, Tether typically records the highest 24-hour trading volume of any cryptocurrency, partly because traders park funds in it during market downturns and partly because its dollar equivalence makes it intuitive for users already familiar with USD-denominated transactions.

The academic literature on cryptocurrency in cross-border payments is growing but remains patchy in the African context. Katsiampa et al. (2018) define cryptocurrencies as digital assets designed to function as media of exchange, secured by cryptography and free from government intervention, a feature that directly addresses the regulatory friction that slows conventional international transfers. Baek and Elbeck (2015), Cheah and Fry (2015), and Dyhrberg (2016) document cryptocurrencies' role as speculative assets, while Zhang et al. (2018), Chu et al. (2017), and Klein et al. (2018) identify the high volatility and heavy-tailed return distributions that limit their reliability as stable stores of value. Vejacked (2014) and Jani (2018) situate these features within broader discussions of cryptocurrency adoption barriers, particularly in developing economies where regulatory clarity is limited and financial literacy is uneven.

RESEARCH METHODOLOGY

Research Design and Scope

The study uses a quantitative cross-sectional design. It is geographically bounded to Buea, South West Region, Cameroon, and temporally covers a 24-month period: the first 12 months were devoted to theoretical grounding and instrument development; the second 12 months to data collection and analysis. The institutional focus is Soft Deal Trading Ltd, a cryptocurrency and mobile money exchange operator in Buea, chosen because its staff and clients have direct operational experience with both cryptocurrency transactions and cross-border mobile money services.

Population and Sampling

The target population comprised employees and active cryptocurrency users associated with Soft Deal Trading Ltd. Using the Yamane (1973) formula at a 95% confidence level and a 5% margin of error:

$$n = N / [1 + N(e)^2] \rightarrow n = 70 / [1 + 70(0.05)^2] = 70 \text{ respondents}$$

Stratified random sampling was applied to ensure representation across gender and staff category. Purposive sampling was used to select Buea as the study site and to ensure all respondents had hands-on experience with

the services under study. Of 70 questionnaires distributed, 69 were returned and were suitable for analysis, yielding a response rate of 98.5%.

Measurement Instrument

A structured, closed-ended questionnaire was administered, with items rated on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The instrument covered five thematic areas: respondent demographics; familiarity with and usage of each cryptocurrency; cross-border mobile money experience; perceived advantages and risks; and willingness to recommend cryptocurrency-integrated services. The questionnaire was piloted with a small group of subject-matter experts before full administration.

Econometric Model

Ordinary least squares multiple regression was estimated with mobile money service performance as the dependent variable and the three cryptocurrencies as predictors:

$$\text{MMS}_i = \lambda_0 + \lambda_1 \text{BTC}_i + \lambda_2 \text{ETH}_i + \lambda_3 \text{USDT}_i + \varepsilon_i \dots (1)$$

where MMS denotes the cross-border mobile money services outcome index; BTC, ETH, and USDT are standardised scores for Bitcoin, Ethereum, and Tether usage respectively; λ_0 is the intercept; λ_1 – λ_3 are partial slope coefficients; and ε is the error term. Prior expectations were positive signs on BTC and USDT given their established user bases, and ambiguous or positive on ETH given its programmability, though the literature raised concerns about gas fees. Model diagnostics included the Durbin-Watson statistic for serial autocorrelation, the F-test for overall significance, and t-tests for individual coefficient significance.

RESULTS AND DISCUSSION

Sample Profile

The sample is predominantly young: 76.8% of respondents fell between 20 and 40 years old, 21.7% between 41 and 60, and only 1.4% above 60. Males accounted for 72% and females for 28%, reflecting the gender composition of the firm's staff. Educational attainment was high, 71% held tertiary qualifications, 21.7% had completed secondary school, and 7.2% had primary education only, suggesting a workforce capable of engaging critically with financial technology.

Most respondents were relatively new to cryptocurrency: 78.3% had been using it for five years or fewer, 14.5% for 6–10 years, and only 7.2% for more than 11 years. Mobile money experience was, by contrast, far more established: 78.3% had used mobile money for 6–10 years and 15.9% for 11–15 years, with only 4.3% in the 0–5 year bracket. The asymmetry is informative, these are users who know mobile money well and are only beginning to engage with cryptocurrency.

Cryptocurrency Awareness and Usage Patterns

Across descriptive comparisons of the three instruments, Bitcoin was the most widely recognised, reflecting its first-mover advantage and sustained media coverage. Tether was the most actively traded, with the highest proportion of respondents having both invested in and used it for purchases and payments, its dollar peg making it intuitive for users who already think in USD terms. Ethereum lagged on every awareness and familiarity measure; notably, respondents were most likely to be neutral rather than informed about its risk characteristics, a pattern consistent with low exposure rather than deliberate risk acceptance. Regarding cross-border mobile money experience (Table 1), all 69 respondents reported having encountered challenges in cross-border transactions, a unanimous signal that the status quo is inadequate. Satisfaction with existing services was nonetheless high (100% agreement), suggesting respondents value mobile money despite its limitations rather than rejecting it. Roughly three-quarters (75.4%) considered mobile money more secure than traditional payment methods, and 87% said they would recommend it to others for cross-border use.

Table 1. respondents percetion on Cross-Border Mobile Money Service

Statement	Response	Frequency	%
Overall satisfaction with mobile money for cross-border services	Agree / Strongly Agree	69	100.0
Encountered challenges in cross-border transactions	Agree	69	100.0
Use mobile money for cross-border payments	Agree / Strongly Agree	51	73.9
Mobile money more secure than traditional methods	Agree	52	75.4
Would recommend mobile money for cross-border use	Agree / Strongly Agree	60	87.0

Source: Field survey (2023).

Correlation Analysis

Table 2 presents pairwise Pearson correlations. Bitcoin shows a significant positive correlation with mobile money services ($r = 0.410$, $p < 0.001$). Tether also correlates positively and significantly with mobile money ($r = 0.329$, $p = 0.006$). Ethereum's correlation with mobile money is positive but negligible and statistically insignificant ($r = 0.055$, $p = 0.655$).

All inter-predictor correlations are positive and significant, with the highest being between Ethereum and Tether ($r = 0.541$). These moderate inter-predictor associations do not approach levels that would threaten the stability of the regression estimates.

Table 2. Pairwise Pearson Correlation Matrix

Variable	Mobile Money	Bitcoin (BTC)	Ethereum (ETH)	Tether (USDT)
Mobile Money	1.000			
Bitcoin (BTC)	0.410**	1.000		
Ethereum (ETH)	0.055	0.520**	1.000	
Tether (USDT)	0.329**	0.296*	0.541**	1.000

Note: ** $p < 0.01$ (2-tailed); * $p < 0.05$ (2-tailed). Source: Field survey (2023).

Regression Results

Table 3 presents the model summary. The three cryptocurrency predictors jointly account for 32.3% of the variance in mobile money service outcomes ($R^2 = 0.323$), with the adjusted figure of 29.2% reflecting a reasonable fit for a three-predictor cross-sectional model of this size. The Durbin-Watson statistic of 2.178 is within the acceptable range (1.5–2.5), confirming the absence of problematic serial autocorrelation.

Table 3. Model Summary

R	R ²	Adjusted R ²	Std. Error	Durbin-Watson
0.568	0.323	0.292	0.338	2.178

Note: Predictors: Bitcoin, Ethereum, Tether. Dependent variable: Mobile money services. Source: Field survey (2023).

The ANOVA results (Table 4) confirm that the model is globally significant: $F(3, 65) = 10.344$, $p < 0.001$. The cryptocurrency predictors collectively explain a statistically robust share of variation in cross-border mobile money service outcomes.

Table 4. Analysis of Variance (ANOVA)

Source	Sum of Squares	df	Mean Square	F	p-value
Regression	3.554	3	1.185	10.344	< 0.001
Residual	7.445	65	0.115		
Total	10.999	68			

Note: Dependent variable: Mobile money services. Source: Field survey (2023).

Individual coefficient estimates are reported in Table 5. The intercept of 2.320 ($p < 0.001$) reflects the baseline mobile money service level when all cryptocurrency predictors are at zero, i.e., in the complete absence of cryptocurrency integration.

Table 5. OLS Regression Coefficients

Variable	B	Std. Error	Beta (β)	t	p-value
(Constant)	2.320	0.387	-	5.988	< 0.001
Bitcoin (BTC)	0.388	0.090	0.515	4.311	< 0.001
Ethereum (ETH)	-0.339	0.105	-0.436	-3.214	0.002
Tether (USDT)	0.347	0.102	0.412	3.399	0.001

Note: Dependent variable: Mobile money services. Source: Field survey (2023).

The estimated regression equation is:

$$MMS_i = 2.320 + 0.388 \text{ BTC}_i - 0.339 \text{ ETH}_i + 0.347 \text{ USDT}_i \dots (2)$$

DISCUSSION

Bitcoin with the coefficient of 0.515 and probability value less than 0.001 has a positive and highly significant effect on Cross-border mobile money transfers. The result is consistent with TAM predictions for a technology that is widely known, frequently traded, and embedded in the mental map of even new cryptocurrency users. At Soft Deal Trading Ltd, the practical mechanism is straightforward: a customer with Bitcoin can sell it to the firm, which converts it to local currency mobile money and transfers it to the cross-border recipient. Bitcoin's liquidity ensures that the conversion step is fast and generates a competitive rate. The significant positive relationship

documented here echoes findings in the broader literature on cryptocurrency as a medium of exchange (Li & Wang, 2016; Dyhrberg, 2016).

Ethereum's significant negative effect ($\beta = -0.436$, $p = 0.002$) is the most striking result and deserves careful interpretation. It does not mean that Ethereum's technology is inferior, its smart contract capabilities are genuinely powerful. What the result captures is the practical experience of the Buea sample: most respondents had little familiarity with Ethereum, had not invested in it, and were uncertain about its risk profile. More concretely, Ethereum's gas fees, the network charges for processing transactions, become economically punishing for the small-value, high-frequency transfers that characterise cross-border mobile money remittances. Converting Ethereum to mobile money at these fee levels means the recipient receives less than the cost of the original transfer justifies. The negative coefficient is the statistical expression of that commercial logic.

Tether's positive effect ($\beta = 0.412$, $p = 0.001$) reflects its particular suitability for remittance-style use. Its dollar peg eliminates the price risk that makes Bitcoin unsuitable as a unit of account for time-sensitive transfers; its inter-wallet transfer fees are minimal; and its widespread acceptance on major exchanges means it can be liquidated rapidly in most markets. For a firm like Soft Deal Trading Ltd, accepting USDT from a sender abroad and converting it to mobile money locally is a low-friction, low-risk operation. The high proportion of respondents who had invested in and transacted with Tether relative to the other two instruments confirms this reading.

CONCLUSION AND POLICY IMPLICATIONS

This study set out to examine how three cryptocurrencies, Bitcoin, Ethereum, and Tether, affect cross-border mobile money services at a Cameroonian fintech operator. The regression evidence is unambiguous on the direction: Bitcoin and Tether improve cross-border mobile money service outcomes, Ethereum depresses them. The model explains roughly 29% of the adjusted variance in outcomes across a sample of 69 respondents, with all three cryptocurrency predictors reaching statistical significance.

Implications of this study is that, for firms like Soft Deal Trading Ltd, the operational priority is to deepen Bitcoin and Tether integration into the cross-border service workflow, creating clear processes for accepting these instruments from customers, converting them to local mobile money, and remitting to recipients. The conversion-to-mobile-money model is already in use informally; formalising and scaling it would increase both revenue and service reliability. Ethereum-based services, by contrast, should either be restructured to include explicit fee compensation mechanisms or suspended until network upgrades reduce gas costs to commercially viable levels.

For regulators and policymakers, the evidence here points to a need for cryptocurrency-mobile money interoperability frameworks. Cameroon's Central Bank and BEAC (Banque des États de l'Afrique Centrale) have not yet established regulatory guidance on cryptocurrency-mobile money integration. Clear, proportionate rules, rather than prohibition, would allow the positive network effects documented here to scale while managing the financial integrity risks that decentralised assets introduce.

For the cryptocurrency industry, the finding that awareness and familiarity are the binding constraint on Ethereum adoption, rather than technical inferiority, suggests that targeted financial literacy campaigns directed at mobile money users could substantially shift the demand curve. Education on smart contracts, gas fee management, and layer-2 solutions that reduce Ethereum transaction costs would be a direct investment in expanding the addressable market.

Several limitations qualify these conclusions. The sample is drawn from a single firm in one city, and 69 observations constrain statistical power. The cross-sectional design prevents causal inference. Future research should expand geographic and institutional coverage, incorporate objective transaction-volume data alongside survey responses, and explore the implications of regulatory changes as BEAC and national regulators develop cryptocurrency frameworks.

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