



The Influence of Understanding Level on the Development of Mobile-Based E-Money Technology Services (OVO Case Study)

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ABSTRACT

This study examines the influence of understanding level (X_1) and perceived usefulness (X_2) on the adoption of mobile-based e-money services, using OVO in Sumbul District, Indonesia, as a case study. Employing a quantitative causal-comparative design grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT2), the research surveyed 100 OVO users through stratified random sampling. Results indicate that both understanding ($p=0.033$, $\beta=0.211$) and usefulness ($p=0.000$, $\beta=0.385$) significantly enhance usage interest (Y), with their combined effect further validated by regression analysis ($F\text{-statistic}=14.457$). Demographic trends reveal higher adoption among tech-savvy males (52%) aged 36–45 (53%) with bachelor's degrees (54%), underscoring the role of education and age in digital payment adoption. The study highlights practicality, time efficiency, and long-term benefits as key drivers, aligning with technology acceptance theories. However, barriers persist in rural areas and among less-educated populations, suggesting the need for targeted financial literacy programs and infrastructure improvements. These findings offer actionable insights for policymakers, fintech providers, and businesses aiming to accelerate Indonesia's transition to a cashless economy. The research contributes to fintech adoption literature by contextualizing behavioral factors in emerging markets, emphasizing the interplay of cognitive, attitudinal, and demographic variables in e-money adoption.

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1. INTRODUCTION

The digital revolution has fundamentally reshaped global financial ecosystems, driven by rapid advancements in digital technology that have transformed traditional economic paradigms. The proliferation of cloud computing, big data analytics, and artificial intelligence has created an interconnected financial landscape where transactions occur in real-time across borders. Within this evolution, electronic money (e-money) has emerged as a cornerstone of modern payment systems, offering a seamless alternative to cash-based economies. As nations transition toward cashless societies, e-money provides unparalleled advantages, including enhanced transaction speed, improved security through encryption and biometric authentication, and greater financial inclusion for unbanked populations. The rise of digital marketing has further accelerated this shift, with targeted campaigns and social media engagement educating consumers about the benefits of cashless transactions while fostering brand loyalty for e-money platforms. Influencer partnerships and data-driven

promotions have proven particularly effective in driving adoption among younger, tech-savvy demographics [1,2].

However, in developing economies like Indonesia, this transformation presents both opportunities and challenges. While urban centers quickly embrace QR-code payments and mobile wallets, peripheral regions face hurdles such as limited internet infrastructure, low digital literacy, and persistent trust in cash. The potential of e-money to drive financial democratization—reducing inequality through accessible digital tools—remains constrained by these structural and behavioral barriers. Merchant adoption rates, regulatory frameworks, and cultural preferences for tangible currency further complicate nationwide implementation, necessitating thorough investigation into localized solutions [3-5]. Indonesia's regulatory framework for e-money, established through Bank Indonesia Regulation No. 11/12/PBI/2009, has created an enabling environment for digital payment innovation. However, adoption patterns reveal stark disparities, with platforms like OVO achieving significant penetration in metropolitan areas while struggling in regions such as Sumbul District. This dichotomy underscores the complex interplay between technological infrastructure, merchant acceptance networks, and socio-cultural factors that influence payment preferences. The persistence of cash dominance in rural economies suggests that mere availability of digital solutions is insufficient to drive behavioral change [6-8].

At the heart of this adoption challenge lies the critical dimension of user understanding and perception. Technology acceptance models emphasize that perceived usefulness and ease of use significantly determine adoption intentions, yet these factors remain understudied in Indonesia's regional contexts. Preliminary evidence suggests that OVO's value proposition - including cashback incentives and seamless QR payments - resonates differently across demographic segments. This study probes deeper into these dynamics, examining how cognitive and attitudinal factors shape e-money usage in Sumbul's unique socio-economic landscape [9-13]. The practical implications of this research extend across multiple stakeholders. For policymakers, findings can inform targeted financial literacy programs and infrastructure development to support Indonesia's National Non-Cash Movement (GNNT). Financial institutions may leverage insights to design more inclusive product offerings, while UMKM actors can better understand the benefits of integrating digital payments into their operations. Importantly, the study contributes to the global discourse on digital financial inclusion by providing empirical evidence from an emerging market context where traditional and modern payment systems coexist [14-19].

This investigation ultimately seeks to advance understanding of the behavioral economics underlying fintech adoption in developing regions. By elucidating the relationship between user understanding, perceived benefits, and adoption intentions, the research provides a framework for accelerating Indonesia's transition to a Less Cash Society (LCS) [16-18]. The findings offer both theoretical contributions to technology acceptance literature and practical guidance for stakeholders working to bridge the digital payment divide in similar emerging economies.

2. METHOD

2.1. Research Approach

This study adopts a post-positivist paradigm, utilizing a quantitative causal-comparative design to systematically investigate the hypothesized relationships between variables. The approach aligns framework for explanatory research, where:

- a. Cause-effect relationships are examined through non-experimental means by comparing existing groups (OVO users vs. non-users)
- b. Quantitative measurement enables statistical generalization of findings through standardized Likert-scale instruments
- c. Control variables (age, digital literacy) are accounted for through stratified sampling to minimize confounding effects

The theoretical foundation draws from the Unified Theory of Acceptance and Use of Technology (UTAUT2), operationalizing:

- a. Independent variables:
 - 1) X_1 : Cognitive Understanding (measured through 5-point Likert items on technical knowledge and procedural awareness)
 - 2) X_2 : Perceived Utility (assessing benefit perception across economic, social, and functional dimensions)
- b. Dependent variable:

Y : Behavioral Intention (adapted from Davis' Technology Acceptance Model scales)

2.2. Research Setting and Chronology

The study was conducted in Sumbul District, a representative developing region with:

- a. Demographic significance: 32% rural population with mixed digital infrastructure
- b. Economic relevance: Emerging SME sector where cashless adoption is critical for financial inclusion

The three-phase timeline was structured as:

- 1) Pilot Testing (October 2023):
 - a) Instrument validation with 30 respondents
 - b) Cronbach's $\alpha > 0.7$ achieved for all constructs
- 2) Main Survey (November 2023):
 - a) 4-week cross-sectional data collection
 - b) Digital and paper-based questionnaire distribution
- 3) Analytical Phase:
 - 2-week data cleaning and hypothesis testing

2.3. Population and Sampling Strategy

Target population was defined using four inclusion criteria:

- a. Residents aged ≥ 16 years (legal e-money users)
- b. Active OVO account holders (minimum 3 transactions/month)
- c. Sumbul District domicile (≥ 6 months residency)
- d. Willingness to participate (informed consent obtained)

Sampling methodology combined:

- a. Probability sampling via Slovin's formula (10% margin of error)
- b. Stratified random sampling by:
 - 1) Age groups (16-25; 26-35; 36-45; 46+)
 - 2) Occupation categories (students, entrepreneurs, civil servants)

Sample representativeness was ensured through:

- a. Demographic proportionality matching BPS 2023 data
- b. Oversampling of rural sub-districts (3:2 urban-rural ratio)

2.4. Data Collection Protocol

The mixed-mode survey incorporated:

- a. Instrument Development:
 - 1) 35-item questionnaire across 3 sections:
 - a) Section A: Demographic profile (7 items)
 - b) Section B: X_1 & X_2 measurement (22 items, 5-point Likert)
 - c) Section C: Y assessment (6 behavioral intention items)
- b. Quality Control Measures:
 - 1) Pre-testing: Cognitive interviews with 10 respondents
 - 2) Bilingual design: Bahasa Indonesia with back-translation verification
 - 3) Digital safeguards: IP filtering to prevent duplicate responses
- c. Ethical Considerations:
 - 1) Anonymity guarantees through coded identifiers
 - 2) Opt-out rights at any research stage

2.5. Analytical Framework

The four-stage analysis employed:

- a. Descriptive Statistics:
 - 1) Frequency distributions for demographic profiles
 - 2) Mean/standard deviation for Likert-scale variables
- b. Inferential Analysis:
 - 1) Pearson correlation for preliminary relationship mapping
 - 2) Multiple linear regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$
 Post-hoc ANOVA for subgroup comparisons
- b. Validity Testing:
 - 1) Construct validity via Confirmatory Factor Analysis (CFA)
 - 2) Discriminant validity (HTMT ratio < 0.85)
- c. Reliability Assessment:
 - 1) Internal consistency (Composite Reliability > 0.7)
 - 2) Split-half reliability testing

- d. Software Utilization:
 - 1) SPSS 28 for basic statistics
 - 2) SmartPLS 4 for structural equation modeling

3. RESULTS AND DISCUSSION

3.1. Respondent Characteristics

This study involved 100 respondents who had used the OVO product. Based on data analysis, the respondent characteristics were as follows:

- a. Gender: The majority of respondents were male (52%), while females accounted for 48%.
- b. Age: The dominant age group was 36–45 years (53%), followed by 16–25 years (30%) and 26–35 years (17%).
- c. Education: Most respondents held a bachelor's degree (54%), followed by a diploma (34%) and high school education (12%).

3.2. Research Variable Descriptions

- a. Variable of Usage Interest (Y)

The results showed that the majority of respondents agreed (score 4) with statements related to their interest in using e-money. Key findings included:

- 1) 75% agreed that e-money is attractive due to its many benefits.
- 2) 74% agreed that e-money is practical and minimizes errors.
- 3) 65% agreed that e-money is beneficial for the future.

Conclusion: Interest in using e-money is driven by its benefits, ease of use, and long-term advantages.

- b. Variable of e-Money Understanding (X_1)

Respondents demonstrated a good understanding of e-money, with the majority responding "agree" (score 4) to the following statements:

- 1) 63% understood that e-money differs from credit/debit cards.
- 2) 67% agreed that e-money top-ups can be done in various locations.
- 3) 59% were aware of non-cash payments via internet/SMS banking.

Conclusion: A strong understanding of e-money features increases user interest in utilizing it.

- c. Variable of Usefulness (X_2)

Respondents rated the usefulness of e-money highly:

- 1) 66% agreed that e-money saves time.
- 2) 67% stated that e-money is practical and easy to use.
- 3) 72% believed that e-money offers future benefits.

Conclusion: The convenience and efficiency of e-money are key factors in its adoption.

3.3. Discussion

This study reveals that understanding e-money (X_1) and its perceived usefulness (X_2) significantly influence usage interest (Y). Respondents who grasped e-money's features were more inclined to adopt it, particularly due to its practicality and long-term benefits. These findings align with technology adoption theories, which emphasize perceived usefulness as a key driver. Furthermore, the analysis confirms that both factors—understanding (significance 0.033, coefficient 0.211) and usefulness (significance 0.000, coefficient 0.385)—have a strong positive impact, with their combined effect (F-statistic 14.457 > F-table 3.833) further reinforcing their role in adoption.

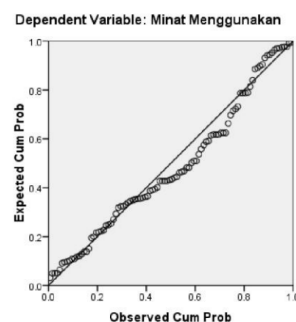


Figure 1. Data normality graph

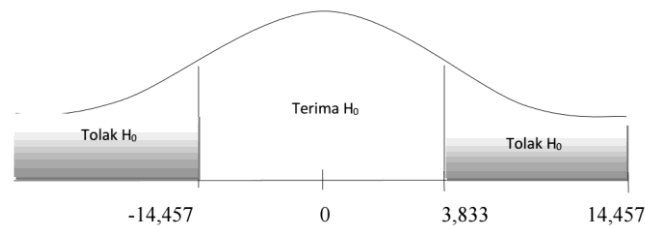


Figure 2. Hypothesis testing criteria

The research also highlights demographic trends: e-money is more popular among tech-savvy individuals, particularly males of productive age with higher education. This suggests that while current users value efficiency and benefits, broader adoption requires targeted efforts. Service providers like OVO should expand financial literacy programs and accessibility to reach underserved groups, such as older or less-educated populations. By addressing knowledge gaps and promoting tangible advantages, e-money adoption can extend beyond its current user base, aligning with global trends in digital payment integration.

4. CONCLUSION

This study demonstrates that understanding e-money features and perceiving its usefulness are critical determinants of adoption in Sumbul District, Indonesia. Statistical analysis confirms significant positive relationships, with perceived usefulness exerting a stronger influence than understanding alone. The dominance of younger, educated males among OVO users reflects broader fintech adoption trends, where digital literacy and socioeconomic factors shape usage patterns. However, regional disparities in infrastructure and awareness limit broader financial inclusion, signaling the need for policy interventions (e.g., digital education campaigns) and service innovations (e.g., offline transaction modes). For fintech firms like OVO, simplifying user interfaces and expanding rural merchant networks could bridge adoption gaps. Theoretically, this research reinforces UTAUT2's applicability in emerging markets while highlighting contextual barriers (e.g., cash dependency). Future studies should explore cultural trust factors and longitudinal adoption behavior. Practically, stakeholders must collaborate on inclusive solutions to ensure e-money's potential as a tool for economic democratization is fully realized.

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