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Forced Adoption of E-Wallets in Conflict Zones: An Extended UTAUT Analysis of Gaza

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Abstract

Background: The rapid evolution of digital financial technologies has reshaped transaction behaviour, particularly in conflict-affected regions where traditional banking systems are disrupted.

Objective: This study examines e-wallet adoption in the Gaza Strip, investigating whether traditional technology acceptance models apply when adoption is necessity-driven rather than preference-based.

Methods: Drawing on an extended unified theory of acceptance and use of technology (UTAUT) model, a sequential exploratory mixed-methods design was employed. The qualitative phase involved 19 semi-structured interviews analysed using MAXQDA 24. The quantitative phase tested the extended model via PLS-SEM using SmartPLS 4 with 305 respondents, examining direct effects of awareness, performance expectancy, effort expectancy, social influence, facilitating conditions and trust on behavioural intention (H1–H6), the intention–use relationship (H7) and moderating effects of conflict zone conditions (H8–H10).

Results: Four out of six antecedents significantly predicted behavioural intention: social influence ($\beta = 0.207$, $p < 0.001$), performance expectancy ($\beta = 0.178$, $p = 0.004$), trust and security ($\beta = 0.174$, $p = 0.006$) and effort expectancy ($\beta = 0.138$, $p = 0.018$), while awareness and facilitating conditions were non-significant. Conflict zone conditions emerged as the strongest direct predictor of actual use ($\beta = 0.435$, $p < 0.001$), surpassing behavioural intention ($\beta = 0.218$, $p < 0.001$), revealing a dual-pathway adoption model. Moderation effects (H8–H10) were not supported, as uniformly severe conflict conditions functioned as a contextual constant rather than a differential moderator. Qualitative data revealed the dual impact of conflict: driving adoption through cash scarcity while imposing barriers via destroyed infrastructure and security fears.

Conclusion: This study demonstrates that UTAUT retains partial explanatory power in conflict zones but requires contextual recalibration. It introduces necessity-driven forced adoption as a distinct mechanism and reconceptualizes conflict as a contextual constant. Findings inform humanitarian technology interventions, emphasizing infrastructure reliability and security transparency over traditional promotion strategies.

Index Terms

E-wallet adoption; Unified theory of acceptance and use of technology; Digital finance; Financial resilience; Conflict zone; PLS-SEM.

1 INTRODUCTION

The rapid expansion of financial technology (fintech) has fundamentally transformed how individuals and businesses conduct financial transactions globally. Electronic wallets (e-wallets), as a key component of this revolution, offer speed, accessibility and security advantages over traditional payment methods.

Digital payment adoption is accelerating worldwide, with mobile wallets experiencing particularly rapid growth in emerging markets, driven primarily by their capacity to address financial inclusion challenges in regions with limited traditional banking infrastructure (Demirgüç-Kunt et al., 2022; Bommer et al., 2022). In Palestine, the infrastructure for digital finance appears promising: 80.2% of the population has home internet access, 90.5% own mobile phones and 89.9% possess smartphones (Tikam & Hinn, 2023), suggesting significant potential for digital financial service adoption.

However, technology adoption patterns differ markedly between stable and conflict-affected environments. In conflict zones such as Gaza, e-wallets are not merely convenient—they are vital survival tools. Protracted conflict has created unique challenges that disrupt daily financial transactions: liquidity shortages, damaged infrastructure, restricted mobility and heightened security risks associated with carrying physical cash. In this context, e-wallets alleviate multiple obstacles simultaneously—enabling remote transactions that mitigate movement restrictions, reducing reliance on scarce physical cash and providing access to international remittances when traditional banking channels are unavailable (Blumenstock et al., 2024; Malaika et al., 2025).

The unified theory of acceptance and use of technology (UTAUT) has emerged as one of the most influential frameworks for understanding technology adoption. It synthesizes eight prior models into a parsimonious structure that explains user acceptance across diverse contexts (Venkatesh et al., 2003). The subsequent consumer-oriented extension, UTAUT2, further incorporated hedonic motivation, habit and price value as additional predictors (Venkatesh et al., 2012). Despite extensive validation across numerous settings, UTAUT and UTAUT2 have rarely been applied in active conflict environments, leaving a critical theoretical gap regarding the model applicability under conditions of forced necessity.

Prior research into mobile money adoption has demonstrated transformative potential in resource-constrained environments. Jack and Suri (2014) showed that mobile money services enable risk-sharing mechanisms and financial inclusion even in areas with limited banking infrastructure, while subsequent research confirmed the role of mobile money in economic development across developing countries (Suri, 2017). However, the Gaza context presents an extreme case: adoption driven not by preference or perceived utility but by the elimination of all alternatives—a phenomenon that we term “forced adoption”.

This paper argues that when adoption is necessity-driven, the relative importance of standard UTAUT predictors shifts considerably and the theoretical model requires contextual recalibration. Specifically, this study introduces the concept of "contextual constant"—a situational condition so pervasive that it functions as a fixed environmental parameter rather than a variable moderator—and examines whether conflict zone conditions function as a direct driver of adoption rather than a moderating force.

1.1 Research purpose and questions

This study investigates e-wallet acceptance and adoption among Gaza residents, a population facing one of the most severe conflict-induced financial disruptions in recent history. The research addresses three overarching questions:

- **RQ1:** What are the key factors influencing e-wallet adoption among residents of Gaza in a conflict-affected environment?
- **RQ2:** How do traditional technology adoption drivers (performance expectancy, effort expectancy, social influence, facilitating conditions, trust) relate to behavioural intention under conflict conditions?
- **RQ3:** To what extent do conflict zone conditions moderate the relationships between adoption drivers, behavioural intention and actual use?

To address these questions, this study employs a sequential mixed-methods design (Creswell & Clark, 2018), integrating qualitative exploration with quantitative validation through PLS-SEM (Hair et al., 2022).

1.2 Study contributions

The study makes three key contributions. Theoretically, it extends UTAUT by examining how the predictive structure of the model operates under crisis conditions, introducing the concepts of "necessity-driven forced adoption" and "contextual constant" to capture adoption dynamics absent from existing frameworks. Empirically, it provides one of the first PLS-SEM analyses of technology adoption in an active conflict zone, using a rigorously

validated mixed-methods instrument combining qualitative interviews (n = 19) with quantitative survey data (n = 305). Practically, findings offer evidence-based guidance for humanitarian organizations and e-wallet providers deploying digital financial services in crisis settings.

1.3 Article structure

The remainder of this paper is organized as follows: Section 2 reviews relevant literature on technology adoption and financial resilience in conflict contexts and develops the study hypotheses. Section 3 describes the mixed-methods research design. Section 4 presents the quantitative and qualitative findings. Section 5 discusses the theoretical and practical implications. Section 6 concludes with limitations and future research directions.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Contextual background: financial resilience and institutional voids in Gaza Strip

Financial resilience is conceptually defined as the capacity of economic agents—particularly marginalized or conflict-affected populations—to maintain transactional functionality and economic agency during periods of systemic disruption (Morrar et al., 2025). In the Gaza Strip, this resilience has been severely tested by decades of conflict, economic blockade and the near-total collapse of traditional banking infrastructure following the October 2023 escalation (OCHA, 2025).

Consequently, the adoption of digital financial services (DFS), specifically e-wallets, has undergone a dramatic transformation in Gaza. Rather than representing a gradual diffusion of innovation, e-wallet adoption has been characterized by rapid, necessity-driven uptake, with PalPay emerging as the dominant platform (88.2% adoption in the current sample), followed by Jawwal Pay and other services. This pattern aligns with broader evidence on digital financial services in conflict-affected states (Malaika et al., 2025) and reflects the persistent gender disparities in financial inclusion that remain salient even in post-crisis recovery contexts (Morrar et al., 2025).

2.2 Theoretical foundation: UTAUT in crisis contexts

The unified theory of acceptance and use of technology (UTAUT) is widely recognized as the dominant framework for explaining technology adoption, synthesizing constructs from eight prior models including the technology acceptance model (TAM) (Davis, 1989), the theory of planned behaviour and the innovation diffusion theory (Venkatesh et al., 2003). The original UTAUT identified four core determinants of behavioural intention and use: performance expectancy, effort expectancy, social influence and facilitating conditions, with gender, age, experience and voluntariness as moderators. The subsequent UTAUT2 extension (Venkatesh et al., 2012) incorporated hedonic motivation, price value and habit as additional predictors relevant to consumer contexts, substantially improving the explanatory power in voluntary adoption settings.

Applying UTAUT to the Gaza context requires a profound theoretical recalibration. This study introduces two novel concepts: (1) **contextual constant**—a situational factor so uniformly pervasive across all participants that it functions as a fixed environmental parameter rather than a variable moderator, thereby eliminating statistical variance necessary for moderation detection; and (2) **forced adoption**—a third adoption mechanism, distinct from both voluntary adoption (driven by preference) and mandated adoption (imposed by organizations), characterized by environmental constraints that eliminate alternatives and compel adoption without genuine choice.

2.3 Hypothesis development

2.3.1 Direct effects on behavioural intention (H1–H6)

Awareness and knowledge (H1)

In stable environments, awareness is often treated as an implicit precursor to technology use. However, recent empirical work on digital payments highlights that explicit awareness and financial knowledge are vital preconditions for adoption, particularly among populations with uneven digital literacy (Kajol et al, 2022; Torres, 2022). In Gaza, the rapid deployment of digital cash modalities by humanitarian agencies has revealed significant literacy gaps, where a lack of understanding regarding PIN codes, fees and digital mechanisms acts as a severe

barrier to enrolment (Cash Working Group, 2024). Consequently, enhancing digital financial capability transforms baseline awareness into a decisive intention to adopt (Hurani & Abdel-Haq, 2025). The inclusion of this construct therefore serves a dual purpose: testing whether detailed operational knowledge—beyond basic awareness—influences adoption intention, and empirically establishing whether awareness retains predictive power when adoption is necessity-driven rather than preference-based.

H1: *Awareness and knowledge have a significant positive effect on behavioural intention to use e-wallets in Gaza.*

Performance expectancy (H2)

Performance expectancy typically reflects the perceived enhancement in transactional efficiency (Venkatesh et al., 2003). While meta-analytical reviews consistently identify this construct as one of the strongest predictors of e-wallet intention (Bommer et al., 2022), the besieged context of Gaza causes this concept to metamorphose into "survival utility". In this setting, the perceived usefulness of e-wallets is no longer merely about convenience; it is inextricably linked to the ability to receive life-saving humanitarian aid, procure basic necessities and mitigate the existential physical risks associated with seeking physical cash (Hinn & Harker, 2024).

H2: *Performance expectancy has a significant positive effect on behavioural intention to use e-wallets in Gaza.*

Effort expectancy (H3)

Effort expectancy delineates the perceived simplicity and ease of operating a digital system (Ghofar et al., 2024). Research extending UTAUT2 in regional contexts has demonstrated that intuitive interfaces significantly affect continuance intention, particularly for vulnerable or less tech-savvy demographic segments. Given Gaza's widespread trauma-related cognitive burdens, frequent power outages and uneven digital familiarity among the elderly, complex registration and onboarding procedures act as significant deterrents (Cash Working Group, 2024). Thus, straightforward user interfaces and operational simplicity remain critical.

H3: *Effort expectancy has a significant positive effect on behavioural intention to use e-wallets in Gaza.*

Social influence (H4)

Traditionally encompassing peer and familial endorsement, social influence in conflict zones is heavily shaped by institutional directives. Current literature underscores that social norms profoundly guide mobile wallet adoption (Ritu & Chawla, 2024). In Gaza, this influence is coercive; international relief agencies and employers mandate the use of digital platforms to distribute stipends and aid, functionally imposing adoption as a prerequisite for survival (World Bank, 2024). Furthermore, information regarding digital modalities spreads rapidly through tight-knit communal and kinship networks, creating immense normative pressure to conform to digital financial channels (Shehade, 2025).

H4: *Social influence has a significant positive effect on behavioural intention to use e-wallets in Gaza.*

Facilitating conditions (H5)

Facilitating conditions reflect the availability of the requisite infrastructural and technical support to utilize a technology (Phuong et al., 2020). In standard contexts, robust infrastructure naturally drives adoption. However, Gaza suffers from systemic infrastructural obliteration, including destroyed telecommunications towers, chronic electricity deficits and severe agent liquidity shortages (Malaika et al., 2025).

H5: *Facilitating conditions have a significant positive effect on behavioural intention to use e-wallets in Gaza.*

Trust and security (H6)

Integrating perceived security and institutional trust into the UTAUT framework yields a superior explanatory model for digital finance (Prasetya & Shuhidan, 2023; Riza & Aditya, 2025). Trust ceases to be a mere psychological comfort; it becomes an absolute existential prerequisite. To mitigate deep-seated security anxieties, robust identity management and transparent financial governance are critical for fostering the behavioural intention required to adopt e-wallets despite immense geopolitical risks (Daragmeh et al., 2022).

H6: *Trust and security have a significant positive effect on behavioural intention to use e-wallets in Gaza.*

2.3.2 Mediation effect (H7)

Standard technology adoption models frequently observe an "intention-behaviour gap", where positive intentions do not seamlessly translate into actual use due to volitional barriers. Nevertheless, in a "no-choice" conflict scenario where physical cash is effectively obsolete, this gap is radically compressed. Necessity-driven adoption accelerates the transition, forcing users to convert behavioural intention directly into actual usage to secure liquidity and ensure basic survival, overriding conventional hesitations regarding digital literacy or technical friction (Khan & Abideen, 2023).

H7: *Behavioural intention has a significant positive effect on actual usage of e-wallets in Gaza.*

2.3.3 Moderation effects: conflict zone conditions (H8–H10)

The theoretical novelty of this study lies in conceptualizing conflict zone conditions (CZCs) as a dynamic moderator that distorts the established causal pathways of the UTAUT framework.

Firstly, active conflict alters the impact of facilitating conditions. Empirical observations in fragile states, such as Afghanistan and Haiti, indicate that severe violence and infrastructural damage amplify the value of offline mechanisms and resilient agent networks (Blumenstock et al., 2024; Malaika et al., 2025). In Gaza, the persistent destruction of the grid means that the presence of even rudimentary technological infrastructure becomes far more critical to adoption intention than it would be during times of peace.

H8: *Conflict zone conditions moderate the relationship between facilitating conditions and behavioural intention to use e-wallets in Gaza.*

Secondly, escalating geopolitical risks significantly magnify the necessity of institutional trust. Digital payment research demonstrates that under conditions of heightened perceived risk, trust acts as a vital protective layer that mediates the adoption decision (Prasetya & Shuhidan, 2023).

H9: *Conflict zone conditions moderate the relationship between trust and security and behavioural intention to use e-wallets in Gaza.*

Finally, while necessity forces intention, extreme conflict realities—such as sudden forced displacement, internet blackouts and device loss—may disrupt the intention-to-use pathway (Cash Working Group, 2024; Malaika et al., 2025).

H10: *Conflict zone conditions moderate the relationship between behavioural intention and actual use of e-wallets in Gaza.*

2.4 Conceptual model

Based on the literature reviewed and hypotheses developed, Figure 1 presents the conceptual model. The model hypothesizes that awareness and knowledge (H1), performance expectancy (H2), effort expectancy (H3), social influence (H4), facilitating conditions (H5) and trust and security (H6) directly predict behavioural intention. Behavioural intention, in turn, predicts actual use (H7). Conflict zone conditions are hypothesized to moderate the facilitating conditions → behavioural intention path (H8), the trust → behavioural intention path (H9) and the behavioural intention → actual use path (H10).

2.5 Research gap and study positioning

Technology adoption is frequently accelerated by severe environmental crises and systemic resource scarcity that eliminate physical payment alternatives, compelling a shift from consumer preference to absolute necessity. The global COVID-19 pandemic mandated the forceful adoption of e-wallets to mitigate health risks associated with physical cash transmission, despite persistent user security apprehensions (Dongsen, 2022; Undale et al., 2021). Similarly, abrupt economic mandates, such as the 2016 demonetization in India, triggered severe cash shortages that physically forced citizens into digital payment ecosystems (Lonare et al., 2018). Furthermore, chronic national cash deficits, such as those historically observed in Zimbabwe, have catalysed substantial growth of mobile payments driven entirely by necessity (Mumtaza et al., 2020). These systemic shocks create environments where digitalization is no longer a voluntary choice but an imposed requirement (Lonare et al., 2018; Undale et al., 2021).

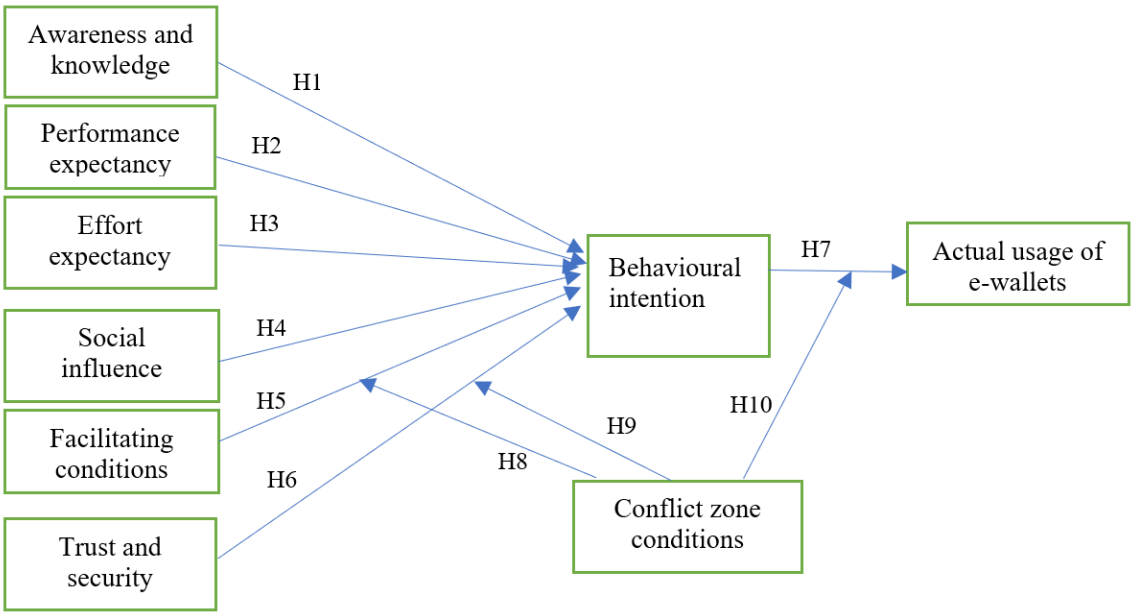


Figure 1. *Proposed conceptual model***.**

Despite these realities, the current technology acceptance literature remains critically underdeveloped regarding the conceptualization of forced adoption. Existing research predominantly employs traditional frameworks such as UTAUT and TAM, which fundamentally presuppose a choice-rich environment and voluntary user autonomy (Faraj et al., 2023; Sheya, 2019). While recent studies have incorporated variables such as perceived risk, trust and security concerns to understand mobile wallet adoption under pressure (Undale et al., 2021), these models still fail to capture the socio-technical complexities of involuntary transitions. Current literature recognizes that crisis-driven utilization heightens security concerns and that forceful adoption is "not wilful", yet largely treats this compulsion as an anomaly within voluntary paradigms (Undale et al., 2021). This highlights an urgent need to extend UTAUT to address extreme external pressures where technological choice is eliminated.

This theoretical shortcoming exposes a profound empirical gap concerning forced e-wallet adoption within active war zones. Current literature is largely situated in stable economies or developing countries facing routine infrastructural challenges, leaving the socio-technical complexities of fragile states undergoing active conflict—specifically the Gaza Strip—largely unexplored (Faraj et al., 2023). Recent evidence suggests that digital financial service usage intensifies during armed conflict as physical banking infrastructure becomes inaccessible (Ozili, 2026), while proposals for "de-cashing" conflict economies to ensure transparency create a dangerous paradox: pursuing financial auditability at the cost of systemic exclusion for vulnerable populations with decimated connectivity (Malaika et al., 2025; Abay et al., 2025).

Beyond the conceptualization of forced adoption, two additional gaps motivate this study. Firstly, no prior study has empirically tested UTAUT in an active, ongoing conflict zone using a mixed-methods design. Current UTAUT applications assume that constructs such as performance expectancy, effort expectancy and social influence operate independently and additively; this assumption may not hold when survival necessity alters the relative importance and interaction patterns of these constructs. Secondly, from a practical standpoint, humanitarian organizations increasingly deploy digital financial services in crisis settings without empirical guidance on the adoption mechanisms that actually drive uptake under duress.

The present study addresses these gaps by empirically testing an extended UTAUT model in Gaza's active conflict environment, integrating qualitative insights to contextualize quantitative findings and introducing the concepts of "necessity-driven forced adoption" and "contextual constant" to improve the applicability of UTAUT in crisis contexts.

3 METHODOLOGY

3.1 Research design

This study adopts an exploratory sequential mixed-methods design (Creswell & Clark, 2018), wherein qualitative findings from Phase I inform the instrument development and theoretical extensions tested in Phase II. The rationale for this design lies in the absence of validated instruments for measuring technology adoption in active conflict zones; the qualitative phase was therefore essential to ensure construct validity and contextual relevance.

The research was conducted in two interconnected phases:

- **Phase I (qualitative exploration):** In-depth, semi-structured interviews with 19 e-wallet users in Gaza were conducted and analysed using MAXQDA 24 to identify context-specific constructs and refine the theoretical model.
- **Phase II (quantitative generalization):** The themes and patterns identified in the qualitative phase directly informed the development and refinement of survey items, which were then tested via PLS-SEM with 305 respondents (Hair et al., 2022).

By integrating both methods, the study achieves triangulation, enhancing the overall validity and reliability of findings (Creswell & Clark, 2018).

3.2 Research context

The Gaza Strip currently represents an extreme socio-economic environment, characterized by protracted conflict, stringent economic restrictions and recurrent military operations. Since October 2023, the region has experienced a catastrophic degradation of its financial and physical infrastructure. According to the Palestine Economic Policy Research Institute (Daraghmeh & Hurani, 2025), the banking sector has incurred direct losses exceeding $14 million, leaving only 3 out of 94 ATMs partially functional across the entire territory by late 2024. This systematic collapse of physical banking, combined with the suspension of cash entries and the looting of approximately $180 million from bank vaults, has precipitated a near-total liquidity crisis (Daraghmeh & Hurani, 2025; World Bank, 2024).

In this volatile setting, digital financial solutions have transitioned from a matter of convenience to a critical tool for survival. The Palestine Monetary Authority (PMA) intervened by launching the iBuraq real-time payment system in mid-2024 to alleviate the liquidity crisis, a strategic move that saw active e-wallet accounts surge to over 530,000 by early 2025 (PMA, 2025; as cited in Daraghmeh & Hurani, 2025). This rapid expansion allowed e-wallets—such as Jawwal Pay, PalPay and iBuraq—to become the primary conduits for humanitarian assistance and commercial transactions. Furthermore, recent humanitarian assessments by OCHA (2025) underscore the necessity of this shift, as 98% of households facing market access barriers identified the lack of physical cash as their primary constraint.

However, this rapid digital transformation is unfolding under severe conflict zone conditions, including chronic power deficits, unstable network connectivity and heightened security risks. Preliminary evidence from a pilot study (n = 93) conducted as part of this research indicates that in such crisis-driven settings, the traditional determinants of technology adoption—such as performance expectancy—may be superseded by more existential factors, including institutional trust and the capacity to navigate conflict-related structural barriers.

3.3 Participants and sampling

This study employed a two-phase sampling strategy aligned with the exploratory sequential mixed-methods design.

Phase I: Qualitative sampling

Purposive sampling was used to recruit 19 Palestinian residents from the Gaza Strip, selected to capture maximum variation across adoption status, demographics and geographic location:

- *Active e-wallet users* (n = 15): Individuals who regularly conduct digital transactions despite infrastructure challenges.
- *Non-users with exposure* (n = 4): Individuals aware of e-wallets but not actively using them, providing a contrastive perspective on barriers.

Participants were selected across five dimensions: age (18–65 years), gender, education level, governorate of residence and e-wallet platform used. Saturation was reached at 17 interviews, with two additional interviews conducted to confirm saturation.

Phase II: Quantitative sampling

Due to ongoing conflict and mass displacement, probability sampling was unfeasible in Gaza. A non-probability digital snowballing strategy was therefore employed, consistent with methodological recommendations for research in conflict-affected settings. Data collection proceeded in two stages: a pilot round (n = 93) for instrument purification via PLS-SEM and a main data collection round (n = 305) for hypothesis testing. Inclusion criteria: participants aged 18 years or older, Gaza residents and smartphone owners. The survey was administered in Arabic via WhatsApp and Telegram between July and August 2025. While the inclusion criteria targeted smartphone owners rather than explicitly differentiating users from non-users, the study intentionally examined both behavioural intention and actual use. This design choice was driven by the theoretical need to test whether environmental necessity bypasses the intention–use pathway posited by UTAUT. Actual use was operationalized as a continuous measure of usage frequency and intensity on a 5-point Likert scale, capturing meaningful variance beyond binary adoption status.

3.4 Research instrument and measurement of variables

Consistent with the exploratory sequential design (Creswell & Clark, 2018), the quantitative instrument was developed through an iterative process informed by qualitative findings:

- Codes related to “physical cash scarcity” and “ATM destruction” informed the six-item conflict zone conditions scale.
- Narratives about “digital security during displacement” shaped the contextualized items for trust and security.
- References to “awareness gaps despite high device penetration” led to the development of the awareness and knowledge scale.

Instrument structure

The survey instrument consisted of two main sections totalling 53 items. The first section included six demographic and profile items covering gender, age group, educational attainment, types of e-wallets used, duration of usage and residential status. The residential status item was specifically included to differentiate between original residents and internally displaced persons (IDPs), as displacement was expected to influence adoption behaviour in the Gaza context.

The second section addressed the theoretical constructs of the study and originally contained 47 items across nine constructs. After the pilot study (n = 93), six items were removed during the purification phase, resulting in a refined scale of 41 items. The measured constructs comprised the core UTAUT elements—performance expectancy (5 items), effort expectancy (4 items), social influence (3 items), facilitating conditions (4 items), behavioural intention (4 items) and actual usage (5 items)—along with three extended constructs developed for this study: awareness and knowledge (5 items), trust and security (5 items) and conflict zone conditions (6 items). These contextual constructs were informed by the qualitative findings from Phase I. All the items in this section were measured on a 5-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree".

Measurement validation and purification

To establish content and face validity, the instrument underwent forward-backward translation by independent bilingual experts, followed by review by a three-member expert panel. The index of content validity (I-CVI) was 0.92. The instrument was administered to 93 participants in a pilot study serving dual purposes: confirming linguistic clarity (mean completion time: 9.3 minutes) and conducting statistical purification via PLS-SEM assessment. Six items (EE5, FC1, SI1, SI5, CZ5, AU6) were removed due to factor loadings below 0.70.

Following pilot refinement, the main data collection (n = 305) revealed persistent measurement challenges. Several constructs exhibited AVE values below the 0.50 threshold: awareness (0.436), performance (0.465), trust (0.482) and actual use (0.443). Social influence showed particularly low reliability ($\alpha = 0.439$), attributed to reduced construct relevance in forced-adoption contexts where necessity overrides social norms. Despite these issues, composite

reliability values remained acceptable (> 0.70) and we proceeded with the analysis given the irreplaceability of the dataset and the exploratory objectives of the study. These measurement challenges are discussed as substantive findings in Section 5.

3.5 Data collection procedures

Phase I: Qualitative data collection

The primary goal of this phase was to explore context-specific factors of e-wallet adoption in Gaza. Semi-structured interviews were conducted via secure video-call platforms (WhatsApp and Zoom) between April and June 2025, each lasting 25–45 minutes. Interviews were conducted in Arabic, audio-recorded with participant consent and transcribed verbatim. Thematic analysis was conducted using MAXQDA 24, following Braun and Clarke's (2006) six-phase framework.

Phase II: Quantitative data collection

Quantitative data collection took place between July and August 2025 using a gated digital snowballing strategy via WhatsApp and Telegram networks. To ensure that respondents were genuinely current residents of the Gaza Strip, survey distribution was initiated exclusively through the researcher's personal contacts and trusted community networks within Gaza, with each distribution node being a verified Gaza resident who further disseminated the survey within their local networks. The survey included a mandatory introductory page informing participants of the study purpose, voluntary participation and data confidentiality. A residential status item required respondents to identify whether they were residing in their original homes or displaced within Gaza, which inherently confirmed their physical presence in the territory. No personally identifiable information was collected. The validity of this sampling approach was further supported by the qualitative phase, in which the researcher conducted interviews both face-to-face and via video calls with participants whose physical presence in Gaza was directly confirmed.

3.6 Common method bias assessment

To address potential common method variance (CMV) arising from self-reported data collected at a single time point, we employed Harman's single-factor test (Podsakoff et al., 2003). Using this diagnostic approach, all 41 measurement items (after purification) were loaded onto a single unrotated factor, which explained 23.01% of the total variance—well below the commonly accepted 50% threshold. This indicates that common method bias is not a major concern in this study. These results suggest that while common method variance may be present to some degree, it does not substantially threaten the validity of our findings.

3.7 Data analysis techniques

Data analysis followed the sequential logic of the research design, where qualitative insights from Phase I informed the interpretation of quantitative anomalies in Phase II.

Phase I (qualitative analysis): The 19 interviews were analysed using MAXQDA 24 through thematic coding, following Braun and Clarke's (2006) framework. Initial codes were generated inductively, then organized into themes and sub-themes aligned with the extended UTAUT constructs.

Phase II (quantitative analysis): Prior to the analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.89, confirming the appropriateness of the data for factor analysis. Bartlett's test of sphericity (χ^2 = 3605.81, df = 820, $p < 0.001$) was highly significant, confirming that the correlation matrix is suitable for factor extraction. All the quantitative analyses were conducted using SmartPLS 4 for PLS-SEM. The analysis followed a two-stage approach: (1) measurement model assessment for construct validity and reliability, and (2) structural model assessment for hypothesis testing.

PLS-SEM was selected because it is well-suited for exploratory research with complex models, accommodates non-normal distributions and performs well with smaller samples (Hair et al., 2022). Bootstrapping with 5,000 resamples was used to generate confidence intervals and significance tests for path coefficients. Effect sizes (f^2) were calculated following Cohen (1988).

3.8 Reliability, validity and ethical considerations

Reliability and validity assessment: Internal consistency was evaluated using Cronbach's alpha (α) and composite reliability (CR), both computed using SmartPLS 4. Content validity was established through forward-backward translation and expert panel review (n = 3), achieving an index of content validity (I-CVI) of 0.92. Construct validity was assessed via convergent validity (AVE, outer loadings) and discriminant validity (HTMT ratio < 0.85) (Henseler et al., 2015).

In the final sample (n = 305), reliability metrics varied across constructs. While most constructs achieved acceptable composite reliability (CR > 0.70), several exhibited AVE values below the 0.50 threshold (awareness = 0.436; performance = 0.465; trust = 0.482; actual use = 0.443). Social influence showed particularly low internal consistency (α = 0.439), attributed to the forced-adoption context where social norms become less relevant. Despite these measurement challenges, the analysis proceeded given the irreplaceability of the dataset and the exploratory objectives of the study. Importantly, these measurement issues are treated not merely as limitations but as substantive findings reflecting how crisis-driven adoption fundamentally differs from voluntary technology acceptance in stable contexts.

Ethical considerations: Participants provided informed consent with assurance of voluntary participation and withdrawal rights. Given the conflict context, strict anonymity was maintained: no personally identifiable information was collected and data are stored securely. Research followed the "do no harm" principles for vulnerable populations. The authors used AI tools (Claude AI and Google Gemini) for language editing, formatting assistance, and development of the Discussion section. All AI-assisted content was critically reviewed, verified, and adapted by the authors, who take full responsibility for the manuscript.

A post-hoc evaluation of outer loadings in the main sample (n = 305) was conducted. While several items exhibited loadings between 0.50 and 0.70, their removal would compromise the theoretical coverage of the constructs. Items with loadings above 0.50 were therefore retained, consistent with Hair et al. (2022). Furthermore, Fornell and Larcker (1981) noted that convergent validity can be considered adequate when CR exceeds 0.60, even if AVE falls below 0.50—a condition met by all the constructs in this study (CR range: 0.721–0.821).

4 RESULTS

4.1 Sample characteristics

The final sample comprised 305 valid responses from Gaza Strip residents. Table 1 presents the demographic characteristics. The sample was predominantly male (63%) and well-educated, with 86.2% holding bachelor's degrees or higher. Approximately two-thirds (69.8%) were internally displaced persons (IDPs), reflecting the widespread displacement during the conflict period. The age distribution showed a young to middle-aged profile, with the majority between 18 and 40 years (66.5%). Regarding e-wallet experience, most respondents had been using digital wallets for 1-2 years (30.2%) or less than 3 months (25.6%), indicating both early adopters and recent crisis-driven users.

E-wallet adoption was near-universal (96.4%), with PalPay most prevalent (88.2%), followed by Jawwal Pay (36.4%). Multiple wallet usage was common, reflecting the fragmented digital payment landscape in Gaza.

***Table 1**. Demographic characteristics of participants.*

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	192	63
	Female	113	37
Age	18-25 years	95	31.1
	26-30 years	28	9.2
	31-40 years	80	26.2
	41-50 years	83	27.2
	> 50 years	19	6.2

Variable	Category	Frequency (n)	Percentage (%)
Education	High school or less	26	8.5
	Diploma	16	5.2
	Bachelor's degree	194	63.6
	Postgraduate	69	22.6
Residential status	Original resident	92	30.2
	Internally displaced (IDP)	213	69.8
E-wallet experience	< 3 months	78	25.6
	3-6 months	20	6.6
	6-12 months	56	18.4
	1-2 years	92	30.2
	> 2 years	59	19.3
E-wallet type	Jawwal Pay	111	36.4
	PalPay	269	88.2
	Other	28	9.2
	None	11	3.6
Total		**N = 305**	**100%**

Table 2 presents descriptive statistics for all the constructs following pilot-stage purification. Mean scores ranged from 3.14 to 4.47. Facilitating conditions showed the lowest mean (M = 3.14, SD = 0.78), while social influence (M = 4.47, SD = 0.57) and performance expectancy (M = 4.42, SD = 0.47) showed the highest means with relatively low variance. Additionally, conflict zone conditions exhibited a high mean score (M = 4.02, SD = 0.41).

Table 2. *Descriptive statistics for study constructs.*

Construct	Items	Mean (M)	Standard deviation (SD)
Awareness and knowledge	5	4.28	0.56
Performance expectancy	5	4.42	0.47
Effort expectancy	4	4.39	0.47
Social influence	3	4.47	0.57
Facilitating conditions	4	3.14	0.78
Trust and security	5	4.07	0.58
Behavioural intention	4	4.29	0.57
Conflict zone conditions	6	4.02	0.41
Actual use	5	4.378	0.50

4.2 Measurement model assessment

Prior to hypothesis testing, the measurement model was evaluated to ensure construct validity and reliability following PLS-SEM guidelines (Hair et al., 2022): outer loadings ≥ 0.70, average variance extracted (AVE) ≥ 0.50, composite reliability (CR) ≥ 0.70 and heterotrait-monotrait (HTMT) ratio < 0.85.

4.2.1 Convergent validity and internal consistency

Internal consistency was evaluated using Cronbach's alpha (α) and composite reliability (CR). CR values ranged from 0.721 to 0.824, surpassing the 0.70 criterion, while Cronbach's alpha values varied between 0.439 and 0.738. Notably, social influence exhibited the lowest reliability ($\alpha = 0.439$), which can be attributed to item reduction during the purification stages.

Convergent validity was assessed via average variance extracted (AVE). The AVE values presented a mixed pattern: effort expectancy (0.575) and behavioural intention (0.513) successfully met the 0.50 threshold. However, several

constructs—awareness (0.436), performance expectancy (0.465), social influence (0.468), facilitating conditions (0.479), trust and security (0.482), conflict zone (0.433) and actual use (0.443)—fell slightly below the ideal 0.50 threshold.

Examination of outer loadings revealed a range from 0.570 to 0.807 across all the indicators. While some items exhibited loadings below the conventional 0.70 threshold, all demonstrated statistical significance ($p < 0.001$) and were retained based on their composite reliability values exceeding 0.70 and their theoretical importance to construct measurement.

The sub-threshold AVE values (ranging from 0.433 to 0.482) and the lower reliability of social influence ($\alpha = 0.439$) represent measurement challenges. Despite these issues, the analysis proceeded based on three rationales: (1) all the CR values remained above 0.70, confirming adequate internal consistency, (2) the exploratory nature of the study and (3) the unique and severe constraints of data collection within an active conflict zone. The theoretical implications of these measurement patterns are further examined in Section 5.

Table 3. *Measurement model quality criteria.*

Construct	Items	Cronbach's α	Composite reliability (CR)	AVE	Assessment
Awareness	5	0.684	0.793	0.436	Acceptable
Performance expectancy	5	0.713	0.813	0.465	Good
Effort expectancy	4	0.631	0.802	0.575	Good
Social influence	3	0.439	0.721	0.468	Acceptable
Facilitating conditions	4	0.644	0.786	0.479	Good
Trust and security	5	0.733	0.824	0.482	Good
Behavioural intention	4	0.685	0.808	0.513	Good
Conflict zone	6	0.738	0.821	0.433	Acceptable
Actual use	5	0.686	0.798	0.443	Acceptable

4.2.2 Discriminant validity

To ensure that each construct in the extended UTAUT model represents a unique theoretical concept, discriminant validity was evaluated using the heterotrait-monotrait (HTMT) ratio of correlations. This method is widely recognized for its superior sensitivity in detecting lack of distinctness compared to traditional criteria (Henseler et al., 2015).

Table 4. *HTMT matrix for discriminant validity assessment.*

	Construct	1	2	3	4	5	6	7	8	9
1	Awareness and knowledge	-								
2	Performance expectancy	0.529	-							
3	Effort expectancy	0.648	0.762	-						
4	Social influence	0.391	0.880	0.668	-					
5	Facilitating conditions	0.438	0.408	0.344	0.367	-				
6	Trust and security	0.628	0.616	0.583	0.690	0.571	-			
7	Behavioural intention	0.329	0.752	0.707	0.884	0.327	0.680	-		
8	Actual use	0.558	0.759	0.734	0.617	0.252	0.611	0.683	-	
9	Conflict zone	0.484	0.719	0.773	0.833	0.332	0.686	0.809	0.779	-

Note: Most HTMT values < 0.85. Highest value: social influence and behavioural intention (0.884), below the 0.90 threshold for exploratory research.

As shown in Table 4, the majority of the HTMT values remained below the conservative threshold of 0.85. The ratios ranged from 0.252 (between actual use and facilitating conditions) to 0.884 (between social influence and behavioural intention). While a few values, such as the relationship between social influence and performance expectancy (0.880) and social influence and behavioural intention (0.884), slightly exceeded the conservative 0.85 criterion, they remained below the 0.90 threshold often used in exploratory research. These results generally confirm that the latent constructs are empirically distinct and possess adequate discriminant validity, even in cases where the average variance extracted (AVE) was slightly below the ideal threshold. The absence of any value exceeding 0.90 further mitigates concerns regarding severe multicollinearity within the structural model.

4.2.3 Collinearity assessment

Before examining the structural model, we assessed potential multicollinearity among predictor constructs using variance inflation factors (VIF). As recommended by Hair et al. (2022), VIF values below 3 indicate no collinearity concerns, values between 3-5 suggest moderate collinearity and values above 5 indicate severe collinearity that may threaten the validity of path coefficients.

Table 5 presents the VIF values for all the predictor constructs of behavioural intention. All the VIF values range from 1.227 to 2.070, well below the conservative threshold of 3, indicating no multicollinearity concerns among the predictor variables. This confirms that the high coefficient of determination ($R^2 = 0.490$) for behavioural intention is not attributable to collinearity among predictors and that each construct contributes unique variance to the model.

Table 5. *Variance inflation factors (VIF) – collinearity assessment.*

Predictor construct	VIF	Assessment
Predictor construct → behavioural intention		
Awareness and knowledge	1.500	No collinearity
Performance expectancy	1.771	No collinearity
Effort expectancy	1.682	No collinearity
Social influence	1.519	No collinearity
Facilitating conditions	1.227	No collinearity
Trust and security	1.804	No collinearity
Conflict zone	2.070	No collinearity
Conflict zone × facilitating conditions intention	1.717	No collinearity
Conflict zone × trust and security	2.007	No collinearity
Predictor construct → actual use		
Behavioural intention → actual use	1.515	No collinearity
Conflict zone → actual use	1.751	No collinearity
Conflict zone × behavioural intention → actual use	1.344	No collinearity

Note: All VIF values < 3 indicate no collinearity concerns (Hair et al., 2022).

4.2.4 Bivariate correlation analysis

To address potential concerns regarding the structural model results, bivariate correlations among all the latent constructs were examined using bootstrapping with 5,000 resamples. As presented in Table 6, all the constructs demonstrated statistically significant correlations with both behavioural intention and actual use ($p < 0.01$). The strongest correlations with behavioural intention were observed for conflict zone conditions ($r = 0.577$, $p < 0.001$), performance expectancy ($r = 0.534$, $p < 0.001$) and social influence ($r = 0.510$, $p < 0.001$). For actual use, conflict zone conditions ($r = 0.570$, $p < 0.001$) and performance expectancy ($r = 0.538$, $p < 0.001$) exhibited the strongest associations. Notably, awareness and knowledge ($r = 0.242$, $p < 0.001$) and facilitating conditions ($r = 0.225$, $p < 0.001$) were both significantly correlated with behavioural intention at the bivariate level despite their non-significance in the structural model, indicating that their effects are absorbed by stronger predictors in the multivariate context rather than being substantively absent.

Table 6. *Bivariate correlations among latent constructs.*

	Construct	1	2	3	4	5	6	7	8	9
1	Awareness and knowledge	-								
2	Performance expectancy	0.369	-							
3	Effort expectancy	0.448	0.502	-						
4	Social influence	0.216	0.495	0.361	-					
5	Facilitating conditions	0.268	0.281	0.232	0.154	-				
6	Trust and security	0.448	0.450	0.399	0.393	0.397	-			
7	Behavioural intention	0.242	0.534	0.471	0.510	0.225	0.486	-		
8	Actual use	0.391	0.538	0.483	0.359	0.169	0.437	0.476	-	
9	Conflict zone	0.361	0.523	0.525	0.480	0.227	0.505	0.577	0.570	-

Note: All the correlations are statistically significant. Bootstrap based on 5,000 resamples.

4.3 Structural model assessment

Following measurement model validation, the structural model was assessed to test the hypothesized relationships (H1-H7). Path coefficients were evaluated using bias-corrected bootstrapping with 5,000 resamples (Hair et al., 2022). Significance was determined at $p < 0.05$, with 95% confidence intervals reported.

3.1.1 Path coefficients and hypothesis testing (H1-H7)

Following the evaluation of the measurement model, the structural relationships were tested using a bootstrapping procedure with 5,000 resamples to assess the significance of the path coefficients (β). Table 7 presents the complete hypothesis testing results, including path coefficients, t-values, p-values, effect sizes (f^2) and 95% confidence intervals. Following Cohen's (1988) seminal guidelines, which remain the gold standard for effect size interpretation in behavioural sciences (Funder & Ozer, 2019; Lakens, 2013), f^2 values of 0.02, 0.15 and 0.35 represent small, medium and large effect sizes, respectively.

Table 7. *Path coefficients, effect sizes and hypothesis testing results.*

H	Path	β	t	p	f^2	Effect	95% CI	Decision
H1	Awareness → BI	-0.093	1.702	0.089	0.012	Negl.	[-0.180, 0.036]	Not supp.
H2	Performance → BI	0.178	2.883	0.004**	0.035	Small	[0.057, 0.303]	Supported
H3	Effort → BI	0.138	2.368	0.018*	0.022	Small	[0.017, 0.246]	Supported
H4	Social → BI	0.207	3.409	< 0.001***	0.056	Small	[0.096, 0.333]	Supported
H5	Facilitating → BI	0.016	0.360	0.719	0.001	Negl.	[-0.064, 0.109]	Not supp.
H6	Trust → BI	0.174	2.728	0.006**	0.034	Small	[0.040, 0.294]	Supported
H7	Behavioural intention → AU	0.218	3.550	< 0.001***	0.050	Small	[0.101, 0.342]	Supported
	Conflict zone → BI	0.207	2.984	0.003**	0.041	Small	[0.073, 0.344]	Supported
	Conflict zone → AU	0.435	6.192	< 0.001***	0.162	Medium	[0.295, 0.575]	Supported

Note: *p < 0.05, **p < 0.01, ***p < 0.001. β refers to standardized path coefficients. Effect size interpretation (Cohen, 1988): $f^2 \geq 0.02$ (small), $f^2 \geq 0.15$ (medium), $f^2 \geq 0.35$ (large). BI = behavioural intention. AU= actual use. CI = confidence interval. Bootstrap based on 5,000 resamples.

As presented in Table 7, the results reveal a consistent pattern of technology adoption within the extended UTAUT framework. **Four out of the six** traditional UTAUT antecedents demonstrated statistically significant impacts on behavioural intention ($p < 0.05$): performance expectancy (H2: $\beta = 0.178$, $p = 0.004$), effort expectancy (H3: $\beta = 0.138$, $p = 0.018$) and social influence (H4: $\beta = 0.207$, $p < 0.001$). Similarly, trust and security (H6: $\beta = 0.174$, $p = 0.006$) was found to be a significant antecedent. In contrast, awareness (H1: $\beta = -0.093$, $p = 0.089$) and facilitating conditions (H5: $\beta = 0.016$, $p = 0.719$) remained non-significant.

Effect size analysis (f^2) confirms these findings, with performance expectancy ($f^2 = 0.035$), effort expectancy ($f^2 = 0.022$), social influence ($f^2 = 0.056$) and trust and security ($f^2 = 0.034$) all demonstrating small effect sizes according to Cohen's (1988) benchmarks, while awareness ($f^2 = 0.012$) and facilitating conditions ($f^2 = 0.001$) showed negligible effects.

Furthermore, the path from behavioural intention to actual use (H7) demonstrated a significant positive influence ($\beta = 0.218$, $t = 3.550$, $p < 0.001$) with a small effect size ($f^2 = 0.050$). Notably, conflict zone conditions emerged as a critical driver, particularly for actual use, showing a medium effect size ($f^2 = 0.162$). The theoretical implications of these significant individual paths, alongside the overall explanatory power of the model, are further examined in Section 5.

4.3.1 Model explanatory power (R^2)

The explanatory power of the structural model was assessed using the coefficient of determination (R^2). Following Hair et al. (2022), R^2 values of ≥ 0.75, ≥ 0.50 and ≥ 0.25 are interpreted as substantial, moderate and weak, respectively. As shown in Table 8, the model explained 49.0% of the variance in behavioural intention ($R^2 = 0.490$, adjusted $R^2 = 0.474$), indicating a power that approaches the moderate threshold. This explanatory power is supported by the significant individual paths identified in the structural model, such as social influence and performance expectancy. For actual use, the model accounted for 35.8% of the variance ($R^2 = 0.358$, adjusted $R^2 = 0.351$), which is interpreted as moderate. This level of explanation is driven by the significant effects of both behavioural intention (H7: $\beta = 0.218$, $p < 0.001$) and conflict zone conditions ($\beta = 0.435$, $p < 0.001$), confirming that the model remains a robust predictor of behaviour even in the unique and forced-adoption context of a conflict zone.

Table 8. *Variance explained (R^2).*

Endogenous construct	R^2	Adjusted R^2	Interpretation
Behavioural intention	0.490	0.474	Moderate
Actual use	0.358	0.351	Moderate

Note: R^2 interpretation thresholds (Hair et al., 2022): ≥ 0.75 = substantial, ≥ 0.50 = moderate, ≥ 0.25 = weak.

4.3.2 Model fit assessment

Model fit was evaluated using the standardized root mean square residual (SRMR), which represents the discrepancy between the observed and model-implied correlation matrices. The saturated model yielded an SRMR of 0.066, while the estimated model produced an SRMR of 0.070, both below the recommended threshold of 0.08 (Henseler et al., 2016), indicating acceptable model fit.

4.4 Moderation analysis (H8-H10)

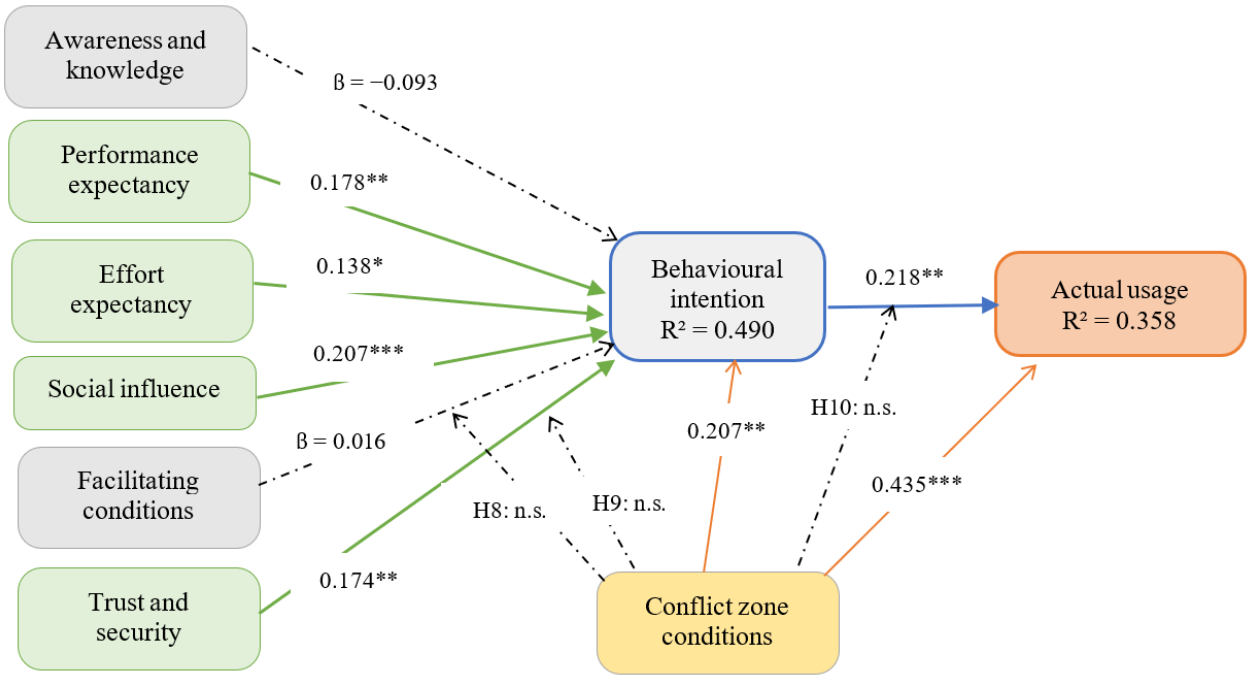
The moderating role of conflict zone conditions was tested using the product-indicator approach with bootstrapping (5,000 resamples). As presented in Table 9, contrary to expectations, none of the hypothesized moderation effects reached statistical significance (all $p > 0.05$), leading to the rejection of H8, H9 and H10.

These null findings are noteworthy given the profound impact of conflict on daily life in Gaza. Rather than indicating that conflict is irrelevant, the null moderation results are theoretically interpreted as evidence that conflict zone conditions function as a "contextual constant" rather than a variable moderator: they are so uniformly severe and pervasive that they affect all participants equally, eliminating the variance necessary for statistical moderation to emerge.

Table 9. *Structural model path coefficients and hypothesis testing (moderation).*

H	Path	β	t	p	f^2	Effect	95% CI	Decision
H8	FC × CZ → BI	-0.075	1.464	0.143	0.012	Negl.	[-0.179, 0.021]	Not supp.
H9	TS × CZ → BI	-0.011	0.303	0.762	0.000	Negl.	[-0.064, 0.082]	Not supp.
H10	BI × CZ → AU	-0.009	0.254	0.800	0.000	Negl.	[-0.082, 0.049]	Not supp.

Note: FC = facilitating conditions; BI = behavioural intention; AU = actual use. Bootstrapping: 5,000 resamples.



Note: Solid lines indicate significant paths; dashed lines indicate non-significant paths. *p < 0.05, **p < 0.01, ***p < 0.001.

***Figure 2**. Structural model results.*

5 DISCUSSION

5.1 Overview of key findings

This study examined e-wallet adoption in Gaza's conflict environment using an extended UTAUT model augmented with awareness and knowledge, trust and security and conflict zone conditions. The structural model revealed that four out of the six antecedents significantly predicted behavioural intention: social influence ($\beta = 0.207$, $p < 0.001$), performance expectancy ($\beta = 0.178$, $p = 0.004$), trust and security ($\beta = 0.174$, $p = 0.006$) and effort expectancy ($\beta = 0.138$, $p = 0.018$), while awareness and knowledge (H1) and facilitating conditions (H5) did not reach significance. Behavioural intention significantly predicted actual use ($\beta = 0.218$, $p < 0.001$), confirming the intention–behaviour link under crisis conditions. Notably, conflict zone conditions emerged as the strongest direct predictor of actual use ($\beta = 0.435$, $p < 0.001$, $f^2 = 0.162$), indicating that environmental necessity drives usage beyond what intention alone explains. The hypothesized moderation effects (H8–H10) were not supported, suggesting that conflict operates as a pervasive contextual constant rather than a differential moderator. These findings indicate that while UTAUT retains partial explanatory power in conflict settings, the adoption mechanism shifts from preference-based evaluation to necessity-driven behaviour.

5.2 Significant predictors of behavioural intention

Social influence emerged as the strongest predictor of behavioural intention ($\beta = 0.207$, $p < 0.001$, $f^2 = 0.056$), consistent with research in developing economies where communal decision-making shapes technology adoption (Venkatesh et al., 2003). Qualitative findings reinforce this: nearly half of the interviewees reported that friends and family positively influenced their adoption decision, while observing others use e-wallets confidently reduced hesitation. However, resistance from older generations was also reported, suggesting that social influence operates bidirectionally in conflict contexts.

Performance expectancy was the second strongest predictor ($\beta = 0.178$, $p = 0.004$, $f^2 = 0.035$), aligning with the broader UTAUT literature (Alalwan et al., 2017). All 19 interviewees expected tangible benefits, particularly speed, convenience and—most critically—a solution to the cash liquidity crisis. This dual functionality, serving both routine financial management and crisis survival, distinguishes performance expectations in conflict zones from stable environments.

Trust and security significantly predicted behavioural intention ($\beta = 0.174$, $p = 0.006$, $f^2 = 0.034$), reflecting heightened sensitivity to financial security in unstable environments (Alalwan et al., 2017; Patil et al., 2020). All 19 participants identified security as essential, with 15 expressing privacy concerns. The occupation context further amplified these fears through references to surveillance and data breaches. These insights explain why trust is significant yet modest—users recognize risks but adopt e-wallets regardless, driven by the absence of alternatives.

Effort expectancy also significantly influenced behavioural intention ($\beta = 0.138$, $p = 0.018$, $f^2 = 0.022$). While most interviewees (14 out of 19) found e-wallets relatively easy to use, challenges related to initial learning, fear of transfer errors and demand for Arabic-language support and continuous technical assistance were commonly reported.

The discrepancy between the low Cronbach's alpha (0.439) and the acceptable composite reliability (0.721) for social influence is likely attributable to the violation of the tau-equivalence assumption underlying Cronbach's alpha (Raykov, 1997). When indicator loadings are substantially unequal—as observed for social influence—Cronbach's alpha underestimates true reliability, whereas composite reliability, which weights indicators by their loadings, provides a more accurate assessment (Hair et al., 2022). Since the CR exceeded the 0.70 threshold, the construct demonstrates adequate internal consistency for the analysis.

5.3 Non-significant paths: awareness and facilitating conditions

Awareness and knowledge did not significantly predict behavioural intention (H1: $\beta = -0.093$, $p = 0.089$, $f^2 = 0.012$), diverging from meta-analytic evidence where awareness emerges as a promising predictor of digital financial service adoption in stable contexts (Neves et al., 2023). However, qualitative findings offer a clear explanation: all 19 interviewees demonstrated awareness of e-wallets and familiarity with local providers such as PalPay and Jawwal Pay. This near-universal awareness transforms the construct into a constant, eliminating its capacity to differentiate adoption intentions. The negative coefficient further suggests that those with deeper knowledge may be more critical of e-wallet limitations, dampening stated intentions despite continued usage.

Facilitating conditions represented the weakest path in the model (H5: $\beta = 0.016$, $p = 0.719$, $f^2 = 0.001$), contrasting with the established UTAUT literature (Venkatesh et al., 2003). Yet qualitative evidence reveals a paradox: while nearly all the participants owned smartphones, the majority (14 out of 19) reported severely degraded connectivity due to infrastructure destruction. Despite these objectively poor conditions and the lowest mean score among all the constructs ($M = 3.14$), adoption remained near-universal (96.4%). This indicates that in conflict zones, facilitating conditions become irrelevant to intention—not because infrastructure is adequate, but because users adopt regardless of infrastructure quality when no alternatives exist.

Notably, bivariate correlation analysis revealed that both awareness ($r = 0.242$, $p < 0.001$) and facilitating conditions ($r = 0.225$, $p < 0.001$) were significantly correlated with behavioural intention at the zero-order level. Their non-significance in the structural model therefore reflects shared variance absorption by stronger predictors rather than absence of a substantive relationship.

5.4 The intention–use link and conflict zone as a direct driver

Behavioural intention significantly predicted actual use (H7: $\beta = 0.218$, $p < 0.001$, $f^2 = 0.050$), confirming the intention–behaviour relationship posited by UTAUT (Venkatesh et al., 2003). However, this effect is notably smaller than the strong behavioural intention–use behaviour relationship typically observed in stable consumer contexts (Tamilmani et al., 2020). This reduced magnitude reflects the presence of a competing direct driver that absorbs explanatory power traditionally attributed to intention alone.

Conflict zone conditions emerged as the strongest predictor of actual use ($\beta = 0.435$, $p < 0.001$, $f^2 = 0.162$), with an effect nearly double that of behavioural intention. This finding aligns with emerging evidence that digital financial service usage intensifies during armed conflict as physical banking infrastructure becomes inaccessible (Ozili, 2026). All 19 interviewees confirmed that war and blockade fundamentally increased e-wallet usage due to the collapse of cash-based systems, describing a reality where e-wallets shifted from a convenient option to a survival tool. Together, both paths explained 35.8% of the variance in actual use ($R^2 = 0.358$), revealing a dual-pathway model where usage is simultaneously driven by volitional intention and structural necessity that bypasses cognitive evaluation processes.

5.5 Non-significant moderation effects: conflict as a contextual constant

Conflict zone conditions did not significantly moderate the relationships between facilitating conditions and behavioural intention (H8: $\beta = -0.075$, $p = 0.143$), trust and security and behavioural intention (H9: $\beta = -0.011$, $p = 0.762$), or behavioural intention and actual use (H10: $\beta = -0.009$, $p = 0.800$). All the interaction terms yielded negligible effect sizes ($f^2 \leq 0.012$). These null findings should not be interpreted as evidence that conflict is irrelevant. Rather, conflict zone conditions operate as a direct contextual force rather than a conditional moderator. The qualitative data support this interpretation: participants described uniformly severe conditions—destroyed infrastructure, persistent electricity outages and complete cash scarcity—with remarkably little variation. Recent research into fintech implementation in Palestine corroborates these findings, documenting systematic infrastructure deficits including restricted telecommunications frequencies, underdeveloped IT infrastructure and widespread disruption of financial access points (Hurani et al., 2025). The conflict zone construct exhibited the lowest standard deviation relative to its mean ($SD = 0.41$, $M = 4.02$), confirming minimal between-subject variability. Statistical moderation requires sufficient variance in the moderating variable; when a moderator operates as a near-constant, interaction effects are mathematically suppressed. The strong direct effects on both behavioural intention ($\beta = 0.207$, $p = 0.003$) and actual use ($\beta = 0.435$, $p < 0.001$) confirm that the role of conflict is not absent but universal.

5.6 Theoretical contributions

This study offers several theoretical contributions to the technology adoption literature.

Firstly, the findings provide empirical evidence for the partial applicability of UTAUT in conflict zones. While four antecedents significantly predicted behavioural intention, their relative importance shifted considerably—social influence and performance expectancy dominated, whereas facilitating conditions became irrelevant. This selective validity suggests that UTAUT requires contextual recalibration rather than wholesale rejection in crisis environments (Dwivedi et al., 2017).

Secondly, the study introduces "necessity-driven forced adoption" as a distinct mechanism. The finding that conflict zone conditions directly predict actual use ($\beta = 0.435$, $f^2 = 0.162$) with an effect double that of behavioural intention challenges the assumption that adoption is fundamentally an intention-mediated process. This extends the forced adoption literature (Bala & Venkatesh, 2016) by demonstrating that environmental coercion can constitute the primary adoption pathway, operating independently of intention-based mechanisms.

Thirdly, the non-significant moderation effects contribute the concept of "conflict as contextual constant". When conditions are uniformly severe, proposed moderators lack the between-subject variance necessary for interaction effects to emerge. This has methodological implications: scholars should assess variance properties of proposed moderators before hypothesizing interactions in extreme contexts.

Fourthly, the coexistence of a significant intention–use path alongside a stronger direct necessity path contributes to the digital resilience theory by revealing a dual-pathway model of crisis adoption, where populations maintain economic functionality through simultaneous deliberate decision-making and structural compulsion.

Finally, the mixed-methods integration revealed mechanisms invisible to quantitative analysis alone—the bidirectional nature of social influence, the transformation of e-wallets into survival instruments and the uniform severity explaining absent moderation effects—underscoring the necessity of qualitative inquiry in extreme contexts.

5.7 Practical implications

The findings of this study yield actionable implications for multiple stakeholders operating in conflict-affected environments. For e-wallet providers, the significance of performance expectancy and effort expectancy indicates that users remain sensitive to functionality and usability even under forced adoption. Providers should prioritize lightweight applications that function under low-bandwidth conditions, as degraded connectivity was the most cited barrier in interviews. The strong role of trust and security further suggests that transparent security protocols and Arabic-language support are essential. Notably, the near-universal adoption rate (96.4%) should not breed complacency—users adopt out of necessity and poor service quality may trigger rapid switching once post-conflict alternatives emerge.

For policymakers, the non-significance of facilitating conditions combined with their lowest mean score (M = 3.14) reveals a critical infrastructure gap that users have been forced to absorb. With 14 out of the 19 interviewees reporting severely degraded connectivity, prioritizing the protection and restoration of digital infrastructure should be a component of humanitarian response. Accelerating digitalization of public service payments could further reduce dependency on cash-based systems vulnerable to conflict disruption.

For humanitarian organizations, the strong direct effect of conflict zone conditions on actual use ($\beta = 0.435$) confirms that e-wallets are actively functioning as crisis-response tools. This validates expanding cash-based interventions through digital channels for safer and more traceable aid delivery. However, qualitative evidence on infrastructure limitations suggests that digital payment programmes must be accompanied by connectivity solutions such as portable network equipment in displacement areas.

5.8 Limitations and future research

Despite its contributions, this study has several limitations that suggest directions for future research. Firstly, measurement challenges were observed: several constructs exhibited AVE values below the 0.50 threshold (0.433–0.482) and social influence showed low internal consistency ($\alpha = 0.439$). While acceptable given the extreme data collection conditions, these values suggest that standard instruments may not fully capture constructs under crisis conditions. In particular, the low alpha of social influence, despite its acceptable composite reliability (0.721) and strongest predictive power ($\beta = 0.207$, $p < 0.001$), suggests that traditional UTAUT items may not adequately capture social dynamics in forced-adoption contexts where collective survival learning replaces preference-based social persuasion. Future research should develop crisis-specific measurement scales for necessity-driven adoption environments.

Secondly, the cross-sectional design limits causal inference. Longitudinal studies tracking adoption from crisis through post-conflict recovery could reveal whether traditional UTAUT predictors regain explanatory power as voluntary alternatives re-emerge.

Thirdly, non-probability sampling and the overrepresentation of educated respondents (86.2% holding bachelor's degrees or higher) limit generalizability. Future research should examine adoption patterns among less-connected populations facing compounded barriers to digital financial inclusion.

Fourthly, context specificity raises transferability questions. While our findings may be relevant to comparable geopolitical conflicts (e.g., Syria, Yemen, Ukraine), their generalizability to different crisis typologies—such as natural disasters or pandemics—remains an open question that requires future empirical investigation. Future comparative cross-crisis studies are needed to delineate the specific boundary conditions of necessity-driven forced adoption across different emergency contexts.

Finally, the qualitative component (19 interviews), while achieving thematic saturation, could be expanded through ethnographic or diary-based approaches capturing daily lived experiences of digital financial tool usage during crisis.

6 CONCLUSION

This study examined e-wallet adoption in Gaza's conflict environment using an extended UTAUT model with 305 valid responses and 19 qualitative interviews. Findings reveal that technology adoption operates differently in necessity-driven forced-adoption contexts compared to voluntary settings. Four out of six antecedents—social influence, performance expectancy, trust and security and effort expectancy—significantly predicted behavioural intention, confirming the partial applicability of UTAUT under crisis conditions. However, awareness and knowledge and facilitating conditions did not reach significance, indicating that when awareness becomes universal and infrastructure barriers are absorbed out of necessity, these constructs lose their discriminatory power.

The most notable finding is the emergence of conflict zone conditions as the strongest direct predictor of actual use ($\beta = 0.435$, $f^2 = 0.162$), surpassing the effect of behavioural intention ($\beta = 0.218$), revealing a dual-pathway adoption model where usage is simultaneously driven by volitional intention and environmental necessity. The non-significant moderation effects (H8–H10) further demonstrate that conflict operates as a contextual constant rather

than a differential moderator, as its uniformly severe impact eliminates the between-subject variance required for interaction effects.

This finding carries an important methodological implication for future crisis research: scholars should mathematically assess the variance and distribution properties of proposed environmental moderators before hypothesizing interaction effects. When a contextual variable exhibits minimal between-subject variability—as conflict zone conditions did in this study (SD = 0.41, M = 4.02)—it functions as a contextual constant that suppresses moderation effects regardless of the substantive relationship. This pre-analysis step would prevent the misspecification of uniformly experienced conditions as differential moderators.

The study makes several key contributions. Theoretically, it identifies boundary conditions for UTAUT applicability in extreme environments, introduces "necessity-driven forced adoption" as a distinct mechanism where environmental coercion bypasses traditional cognitive evaluation and reconceptualizes conflict as a contextual constant rather than a moderating variable. Practically, our findings redirect crisis-technology interventions from traditional promotion strategies towards infrastructure reliability, transparent security protocols and operational continuity.

The integration of quantitative and qualitative methods proved essential: qualitative evidence explained why awareness fails to predict intention when all users are already aware, why facilitating conditions become irrelevant when adoption is non-optional, and why moderation effects disappear when conflict conditions are uniformly experienced.

Beyond Gaza, these findings have implications for understanding technology adoption in any context where user choice is constrained—whether by conflict, natural disaster, or infrastructure collapse. This research extends the discourse from "user acceptance" to "necessity-driven adoption", offering a framework for understanding digital financial inclusion in the world's most challenging environments.

ADDITIONAL INFORMATION AND DECLARATIONS

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Conflict of Interests: The authors declare no conflict of interest.

Author Contributions: W.M.K.: Conceptualization, Methodology, Software, Formal Analysis, Investigation, Data Curation, Writing – Original Draft Preparation, Project Administration. Y.A.Y.: Methodology, Writing – Review & Editing, Validation, Data Curation. M.A.A.: Writing – Review & Editing, Validation, Methodology.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the research.

Statement on the Use of Artificial Intelligence Tools: The authors used AI tools (Claude AI and Google Gemini) for language editing, manuscript formatting assistance, and Discussion section development. All AI-generated content was critically reviewed, verified, and adapted by the authors. Statistical analyses were conducted independently by the authors using SmartPLS 4. The authors maintain full responsibility for the integrity and accuracy of the final manuscript.

Data Availability: The data that support the findings of this study are available from the corresponding author (W.M.K.) upon reasonable request.

APPENDIX A: SEMI-STRUCTURED INTERVIEW GUIDE

Title: Forced Adoption of E-Wallets in Conflict Zones: An Extended UTAUT Analysis of Gaza

Introduction: Thank you for agreeing to participate in this research study. We are a research team from Alaqsa University conducting this study on e-wallet adoption in the Gaza Strip.

Purpose of the Study: This study aims to understand the factors that influence e-wallet adoption in the Gaza Strip, particularly in the context of ongoing conflict and economic challenges.

Confidentiality and Privacy:

- Your participation is voluntary.
- All information will be kept strictly confidential.
- Your responses will be anonymized and used only for research purposes.
- You may choose not to answer any question or withdraw at any time.

Duration: This interview will take approximately 30-45 minutes.

Recording: With your permission, I would like to audio-record this interview for accurate transcription. The recording will be securely stored and deleted after transcription. Do you consent to being recorded?

Do you have any questions before we begin?

Main Interview Questions

Theme 1: Awareness and Knowledge

1. What do you know about e-wallets?
2. Have you heard about any specific e-wallet services available in the Gaza Strip? If yes, name them.

Theme 2: Performance Expectancy

3. What advantages do you think e-wallets offer compared to traditional payment methods?
4. How might e-wallets make your daily transactions easier or more convenient?
5. In what ways do you think e-wallets can positively impact personal or business financial management?

Theme 3: Effort Expectancy

6. Do you think using an e-wallet is easy or difficult? Why?
7. What challenges might you face when learning to use an e-wallet?
8. How could e-wallet providers make their systems easier for you to use?

Theme 4: Social Influence

9. Are there people in your social circle (family, friends, colleagues) who influence your opinion about adopting e-wallets?
10. How do family or community opinions affect your decision to adopt new technology like e-wallets?
11. Do you think the adoption of e-wallets is supported or resisted within your community? Why?

Theme 5: Facilitating Conditions

12. Do you have access to the necessary resources (smartphones, internet) to use an e-wallet?
13. Do you feel the current digital infrastructure in Gaza supports the use of e-wallets effectively? Why or why not?
14. How do you view the role of government and institutions in promoting or supporting e-wallet usage?
15. Are there any specific technological or infrastructural issues that concern you about using e-wallets?

Theme 6: Trust and Security

16. How important is security when using digital financial tools like e-wallets?
17. Do you have concerns about the privacy of your financial data with e-wallets? Why or why not?

Theme 7: Additional Factors

18. Do you think there are other factors that led you to use e-wallets that we haven't discussed?

Closing

Thank you very much for your time and valuable insights. Your participation is greatly appreciated and will contribute significantly to understanding e-wallet adoption in challenging contexts. If you have any questions or would like to know more about the study results, please feel free to contact me at [email]. Your responses will be kept confidential, and you will not be identified in any publications or reports. Thank you again.

APPENDIX B: SURVEY INSTRUMENT

Participant Information and Consent

Dear Participant,

We are a research team conducting an academic study on "Forced Adoption of E-Wallets in Conflict Zones: An Extended UTAUT Analysis of Gaza"

This survey aims to understand the challenges you face and the benefits you find in using these digital payment methods. We assure you that:

- **Complete Confidentiality:** All data provided will be treated with absolute confidentiality and used solely for academic research purposes.
- **Privacy and Security:** The survey does not require your name, phone number, or any personally identifiable information.
- **Voluntary Participation:** Your participation in this research is completely voluntary, and you have the full right to withdraw at any time without providing reasons.
- **Estimated Time:** Completing the survey will take approximately 8-10 minutes.

By completing this survey, you consent to participate in this study.

Thank you very much for your contribution to this research.

Section 1: Demographic Information

1. Gender:
☐ Male ☐ Female

2. Age Group:
☐ Less than 25 ☐ 25–35 ☐ 36–45 ☐ 46–55 ☐ More than 55

3. Educational Level:
☐ High school or less ☐ Diploma ☐ Bachelor's degree ☐ Graduate studies

4. Which of the following e-wallets do you currently use? (Select all that apply)
☐ Jawwal Pay ☐ PalPay ☐ Other ☐ I do not use any e-wallet

5. How long have you been using an e-wallet?
☐ Less than 3 months ☐ 3–6 months ☐ 6–12 months ☐ 1–2 years ☐ More than 2 years

6. Current Residential Status:
☐ Resident (in my original home)
☐ Internally displaced (in shelters, with relatives, or in tent/rented place)

Section 2: Your Opinions About E-Wallets

Please select the degree that expresses your agreement with each statement:

Construct 1: Awareness And Knowledge (Aw)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
AW1	I am well aware of the diverse financial services offered by e-wallet applications in the Gaza Strip.	☐	☐	☐	☐	☐
AW2	I know the technical steps required to open, activate, and secure an e-wallet.	☐	☐	☐	☐	☐

AW3	I can clearly distinguish between licensed e-wallet service providers authorized by the Palestinian Monetary Authority (e.g., Jawwal Pay, PalPay).	☐	☐	☐	☐	☐
AW4	I understand the fundamental difference between using an e-wallet and dealing with traditional bank accounts.	☐	☐	☐	☐	☐
AW5	I have sufficient information about daily withdrawal, deposit, and transfer limits.	☐	☐	☐	☐	☐

Construct 2: Performance Expectancy (Pe)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
PE1	I complete my daily financial transactions faster when using an e-wallet.	☐	☐	☐	☐	☐
PE2	I rely on e-wallets as a primary solution to overcome the cash liquidity shortage crisis.	☐	☐	☐	☐	☐
PE3	I save time and effort that would be spent going to banks or standing in ATM queues.	☐	☐	☐	☐	☐
PE4	I benefit from the remote payment feature in light of movement restrictions or difficult security conditions.	☐	☐	☐	☐	☐
PE5	I improve my financial management efficiency through the speed of receiving and sending transfers at any time.	☐	☐	☐	☐	☐

Construct 3: Effort Expectancy (EE)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
EE1	The process of learning to use e-wallet applications is easy and does not require much time.	☐	☐	☐	☐	☐
EE2	The interfaces of local e-wallet applications are clear and easy to deal with technically.	☐	☐	☐	☐	☐
EE3	I execute transfer and payment operations through simple and clear steps that do not require mental effort.	☐	☐	☐	☐	☐
EE4	Available e-wallet applications suit my current technical skill level.	☐	☐	☐	☐	☐

Note: EE5 was deleted during the pilot study.

Construct 4: Social Influence (SI)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
SI2	People whose opinions I trust (family, friends) encourage me to use e-wallets.	☐	☐	☐	☐	☐
SI3	I notice that e-wallet usage is gaining increasing acceptance in my community.	☐	☐	☐	☐	☐
SI4	Digital financial transaction culture has become a social necessity in light of the current crises in Gaza.	☐	☐	☐	☐	☐

Note: SI1 and SI5 were deleted during the pilot study.

Construct 5: Facilitating Conditions (FC)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
FC2	The infrastructure in Gaza (electricity and internet) adequately supports the use of e-wallets.	☐	☐	☐	☐	☐
FC3	Technical support from e-wallet companies is available and ready to respond to technical problems when needed.	☐	☐	☐	☐	☐
FC4	There are sufficient agent points (withdrawal and deposit) near me.	☐	☐	☐	☐	☐
FC5	The government and institutions provide adequate support to promote electronic payment.	☐	☐	☐	☐	☐

Note: FC1 was deleted during the pilot study.

Construct 6: Trust And Security (TS)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
TS1	Local e-wallet companies apply strong security standards to protect users' funds.	☐	☐	☐	☐	☐
TS2	My financial and personal data is adequately protected from hacking or electronic fraud risks.	☐	☐	☐	☐	☐
TS3	The oversight imposed by the Monetary Authority ensures the safety and reliability of digital financial transactions.	☐	☐	☐	☐	☐
TS4	I feel secure when using biometric protection features (such as fingerprint) in e-wallet applications.	☐	☐	☐	☐	☐
TS5	The e-wallet software system is characterized by accuracy in executing financial operations and transfers.	☐	☐	☐	☐	☐

Construct 7: Behavioral Intention (BI)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
BI1	I have a serious desire to continue using e-wallets as a primary financial option in the future.	☐	☐	☐	☐	☐
BI2	I plan to increase the volume of my digital financial transactions instead of relying on cash.	☐	☐	☐	☐	☐
BI3	I will pay all my monthly obligations and bills via e-wallet regularly.	☐	☐	☐	☐	☐
BI4	I will recommend others around me to activate and use e-wallets.	☐	☐	☐	☐	☐

Construct 8: Conflict Zone Conditions (CZ)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
CZ1	Difficulty obtaining cash from banks and the liquidity crisis represent a primary driver for using e-wallets.	☐	☐	☐	☐	☐
CZ2	E-wallets provide a safer alternative than carrying cash under conflict conditions.	☐	☐	☐	☐	☐
CZ3	The disruption of bank branches and ATMs made e-wallets the only available alternative.	☐	☐	☐	☐	☐
CZ4	Using e-wallets is a necessity for receiving money in cases of displacement or emergencies.	☐	☐	☐	☐	☐

CZ6	E-wallets are an essential tool for achieving financial resilience in Gaza.	☐	☐	☐	☐	☐
CZ7	War and blockade conditions increased my need to use e-wallets.	☐	☐	☐	☐	☐

Note: CZ5 was deleted during the pilot study.

Construct 9: Actual Use (Au)

Item Code	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
AU1	I use e-wallets regularly (daily/weekly) in my actual financial transactions.	☐	☐	☐	☐	☐
AU2	I regularly pay for purchases from shops through e-wallet applications.	☐	☐	☐	☐	☐
AU3	I rely on the application to top up credit and pay utility bills (water/electricity/internet).	☐	☐	☐	☐	☐
AU4	I transfer money to friends or relatives using the instant transfer feature in the wallet.	☐	☐	☐	☐	☐
AU5	I receive my financial dues or aid through the wallet instead of traditional methods.	☐	☐	☐	☐	☐

Note: AU6 was deleted during the pilot study.

Thank you for your valuable participation!

Survey Notes

1. Original Survey: 53 items across 9 constructs

2. Items Deleted During Pilot Study (n=93):

- EE5 (reverse-coded - low loading)
- FC1 (redundant)
- SI1 (low loading)
- SI5 (low loading)
- CZ5 (low loading)
- AU6 (low loading)

4. Final Survey: 47 items retained for main data collection (n=305)

5. Item Coding Summary:

- AW: Awareness and Knowledge (5 items: AW1-AW5)
- PE: Performance Expectancy (5 items: PE1-PE5)
- EE: Effort Expectancy (4 items: EE1-EE4)
- SI: Social Influence (3 items: SI2-SI4)
- FC: Facilitating Conditions (4 items: FC2-FC5)
- TS: Trust and Security (5 items: TS1-TS5)
- BI: Behavioral Intention (4 items: BI1-BI4)
- CZ: Conflict Zone Conditions (6 items: CZ1-CZ7)
- AU: Actual Use (5 items: AU1-AU5)

6. Measurement Scale: All items measured on 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree)

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