

A Contextual Model of BNPL Adoption, Financial Inclusion, and Consumer Vulnerability in Nigerian E-Commerce

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Abstract

This financial exclusion translates into 36% of adults in Nigeria being unable to smooth their consumption, accumulate assets, and hence break the poverty cycle. Buy Now, Pay Later digital credit services have also grown exponentially in Nigeria, promising to plug this financial exclusion gap. However, the implications of BNPL services on household welfare and poverty are yet to be understood. In this paper, we aim to explore the implications of BNPL services on the UN's Sustainable Development Goal 1: No Poverty, Goal 8: Decent Work, and Goal 10: Reduced Inequalities by developing a contextual model of BNPL adoption in Nigeria's unique financial environment. By combining the Theory of Planned Behavior, Behavioral Finance, and Financial Inclusion theories, we propose that Perceived Financial Inclusion, Perceived Regulatory Risk, and Repayment Channel Convenience are crucial yet neglected factors in BNPL adoption by Nigerians. We use Structural Equation Modeling to test our hypotheses using data obtained from a stratified sample of 1,200 e-commerce consumers in Nigeria. Our results show that BNPL adoption is driven by the perceived accessibility of BNPL as a credit option, although this relationship is moderated by perceived regulatory risks. Financial literacy plays a significant role in moderating the association between BNPL usage and household financial fragility. This study contributes the first empirical results on the effect of digital credit on household financial fragility in the biggest economy in Africa, with important policy implications for poverty reduction strategy, as well as a new framework for FinTech adoption in emerging markets, together with critical policy implications for Nigerian policymakers

1. Introduction

Nigeria is currently dealing with a threefold challenge that is critical to its developmental prospects. This makes its credit market in the realm of digital credit extremely critical. In Nigeria, 40 percent of adults are living below the poverty line (National Bureau of Statistics [NBS], 2023). Additionally, 80 percent of its workforce is engaged in informal activities (International Labor Organization [ILO], 2022). Moreover, 36 percent of adults are formally unbanked (CBN, 2023). Therefore, access to credit is not only about convenience; rather, it is about survival and moving out of poverty.

The global financial technology (FinTech) industry has experienced a paradigm shift with the advent of Buy-Now-Pay-Later (BNPL) services. These point-of-sale installment credit facilities, which are usually offered at no interest for a specific period of time and can be accessed online, have changed from being a niche product to a mainstream payment option in regions such as North America, Europe, and Australia (World Bank, 2022).

The same can be said of the academic community, with emerging studies on the antecedents of BNPL through various theories of technology adoption and the correlations of BNPL with consumer over-

spending, well-being, and debt formation in developed economies (Maurer, 2021). Missing is development-oriented research on the role of digital credit in Sub-Saharan Africa.

Nigeria is a paradigmatic case. With an e-commerce market size projected to reach over \$75 billion by 2025, a young and technologically active population, and a significant unmet demand for financial services, Nigeria is an environment where the promise of BNPL is particularly salient. BNPL is a natural experiment in the potential of digital credit in reducing the financial exclusion of Nigerians without adding to the vulnerability of the population. This is particularly relevant in the context of the Sustainable Development Goals and the poverty reduction strategy of the country in the context of SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities). Nevertheless, this growth is done in an environment that is vastly different in terms of fundamental aspects when compared to Western economies. Thus, the Nigerian financial environment is marked by the following aspects: (1) dominance of an informal credit system, i.e., esusu and trader credit; (2) lack of regulatory clarity on digital credit, which creates a trust gap; (3) payment systems that are dominated by mobile money and USSD rather than credit cards; and (4) a population that is highly vulnerable in terms of income and financial literacy. This paper proposes the following query: Can BNPL help in improving financial inclusion without increasing vulnerability among households in Nigeria, and how does this differ across various strata of Nigerian society?

To address this query, this paper proposes a novel conceptual model that builds on existing theory in terms of adoption. This paper proposes a model that incorporates existing theory on adoption, i.e., Theory of Planned Behavior (TPB), along with aspects of behavioral finance theory and financial inclusion. Thus, this paper proposes Perceived Financial Inclusion, Perceived Regulatory Risk, and Repayment Channel Convenience as critical aspects that can help explain BNPL adoption in Nigeria. This study has four major contributions. First, it offers theoretical novelty through the contextualized approach to digital FI in emerging economies. Second, it offers empirical content through the quantified examination of the relatively unexplored intersection of BNPL, FI, and debt risk in the largest economy in Africa. Third, it offers policy relevance for the Nigerian government in the pursuit of the FI-innovation balance. Fourth, it offers a development policy contribution through the identification of the best strategies for achieving FI with minimal risk of poverty.

2. Literature Review

The structure of this review is designed to provide a conceptual base, theoretical framework, and empirical context for the research. First, it provides a definition of the concepts in the context of Nigeria, followed by the discussion of the most suitable theories for analysis, a synthesis of the available empirical studies globally and in the emerging local context, the development economics literature, and the context for development in Nigeria.

2.1. Conceptual Review: Defining the Nigerian BNPL Ecosystem

In order to understand BNPL in Nigeria, it is necessary to transcend the general descriptions to place its importance in the context of the country's socio-economic environment.

• Buy Now Pay Later as a Financial Inclusion Mechanism

In the context of the global economy, BNPL has been recognized as a disruptive payment technology. However, in the context of the Nigerian economy, the importance or utility of BNPL can be recognized as being fundamentally different. Since, in the country, 36% of the adult population lacks access to formal banking services (CBN, 2023), BNPL services are promoted not only as a payment technology but also as a service for providing access to formal credit services, thereby creating a potential link to financial inclusion for millions of consumers. This recognizes the importance of Perceived Financial Inclusion as a construct, defined as the consumer's perception or belief in the potential to access formal credit services through BNPL.

• Consumer Vulnerability in a Context of Informality and Volatility

The financial fragility of households in developed economies is sometimes seen as being driven by over-indebtedness in relation to stable income. In the context of Nigeria, income instability, especially in the dominant informal economy, adds to the vulnerability. The rigid payment schedules associated with BNPL could also lead to default as well as high interest rates. In addition, the general vulnerability of the population's livelihoods is also driven by low financial literacy, which would

make it difficult for the consumer to make long-term cost evaluations as well as understand the terms and conditions associated with the product, as is normally discussed in the local discourse.

- **The Coexistence of Formal BNPL and Informal Credit Systems**

Nigeria has a well-established culture of informal finance, most commonly in the form of esusu (rotating saving and credit associations) and trader credit. These operate on the basis of social collateral, trust, and obligations to one another. However, the arrival of BNPL, a formal product that is impersonal and technology-driven, presents a new reality where a dual credit system exists in the minds of the Nigerian consumer. They may seek to benchmark the trustworthiness, flexibility, and cost of the BNPL product against the informal credit system. An estimated 40 to 60% of Nigerian adults are involved in esusu associations (EFInA, 2023), and hence the benchmarking of the BNPL product cannot be overlooked in the analysis.

- **Regulatory Ambiguity and Trust Deficit**

The state of the regulatory landscape in the Nigerian digital credit sphere may be described as evolving. Although the Central Bank of Nigeria (CBN) and the Federal Competition and Consumer Protection Commission (FCCPC) have started issuing guidelines, the enforcement thereof remains wanting. This gives rise to the concept of Perceived Regulatory Risk, which refers to the aggregate concerns of the consumer in the areas of data privacy, unfair collections, and lack of redress in case of a dispute.

2.2. Theoretical Review: Foundations for a Contextual Model

To effectively analyze the BNPL landscape in Nigeria, a theoretical framework needs to be integrated to ensure a comprehensive understanding of the phenomenon.

- **The Theory of Planned Behavior (TPB) as an Anchor**

The Theory of Planned Behavior is a parsimonious and robust theory for predicting intentions. It states that Attitude (the general evaluation of the behavior), Subjective Norms (social pressures), and Perceived Behavioral Control (PBC) collectively influence intentions. Intention is seen as the immediate precursor to behavior. In the Nigerian context, Attitude may not be about convenience but about empowerment. Subjective Norms are largely dependent on social media networks. Perceived Behavioral Control is not only about digital literacy but also about access to payment systems that can facilitate repayment.

- **Integration with Behavioral Finance Principles**

Behavioral finance principles are important in understanding where consumers might go wrong. Present bias, where people overvalue immediate gratification over future costs, explains the 'buy now' bias and the de-emphasis on 'pay later.' Mental accounting, where people treat money differently depending on its source and purpose, may cause consumers to view BNPL credit as not real money and therefore overspend. These biases are common to all consumers. However, they may have more dire implications for consumers in societies that do not have adequate safety nets.

- **The Financial Inclusion Lens**

The existing literature on financial inclusion has moved the focus beyond the psychological level to the overall availability of resources. It has also viewed the role of financial services in a new light as tools that aid in economic empowerment and poverty reduction (Demirguc-Kunt et al., 2022). Using the lens of the financial inclusion literature, the analysis of BNPL has moved beyond the psychological level to view it as a tool that may be used for the exploitation of the existing gaps in consumer protection or as a tool for inclusion. This has also prompted the inclusion of the overall macro-contextual variables of Perceived Financial Inclusion and Perceived Regulatory Risk in the overall framework.

- **Synthesis: A Contextualized TPB Framework**

The proposed framework has used the overall framework of the TPB as a base but has also viewed the overall formation of Attitude, Subjective Norm, and PBC in the context of emerging markets like Nigeria as a function of the overall influence of the overall context. It has also viewed the overall influence of the overall variables of Perceived Financial Inclusion, Perceived Regulatory Risk, and Repayment Channel Convenience in shaping the overall intention in a more holistic manner.

2.3. Empirical Review: Global Evidence and the Nigerian Gap

A review of recent empirical research indicates a geographically skewed nature of the available body of knowledge, thus emphasizing the importance of conducting this study.

• BNPL Adoption Drivers in Developed Markets

The results of recent empirical research in Western countries consistently reveal key drivers. Mishra et al. (2022) recently validated the relevance of perceived usefulness and ease of use, both critical components of the widely accepted Technology Acceptance Model, in predicting BNPL adoption. Lee et al. (2023) also recently emphasized the importance of social influence, as well as the need to conduct seamless transactions. However, all these studies are based on the assumption of high banking penetration, digital identity, and consumer protection, which are not present in Nigeria.

• Consumer Behavior and Financial Consequences

Research has empirically demonstrated a strong correlation between BNPL and impulse purchases. Research indicates that the separation between purchase and immediate payment reduces “pain of paying” and increases purchase size (Consumer Financial Protection Bureau, 2022). Moreover, emerging correlations between BNPL and financial stress, overdraft charges, and credit scores have been noted in Australia and the USA. These results pose critical questions about emerging market implications and potential consequences that could have a greater welfare impact on households in vulnerable economies (Schicks, 2014; Zinman, 2015).

The Dearth of Research in Emerging and African Contexts

The empirical gap in BNPL in sub-Saharan Africa is sizeable. A systematic review on FinTech in Africa conducted by Ozili (2023) indicates that although mobile money is extensively researched, digital credit products such as BNPL are “severely under-researched.” Research on BNPL is limited to studies conducted on East Africa's digital credit market, which is vastly different from BNPL. No quantitative study has been conducted on BNPL's adoption drivers and outcomes in Nigeria's market ecosystem. Industry reports are vital sources of information on market growth and market size. However, they lack academic theory and empirical depth.

• Gap Identified:

There exists a significant knowledge gap in the form of a lack of theory-based empirical studies that investigate the adoption of BNPL by applying the contextual perspectives of financial inclusion, regulatory trust, and infrastructure compatibility. This study seeks to address the identified knowledge gap by quantitatively testing a contextualized model in the Nigerian market, making the study relevant to the local context and theoretically contributory to the broader context of emerging markets globally.

2.4. Financial Inclusion and Development

To contextualize BNPL in the wider development economics literature is critical in understanding its welfare effects. A sizeable body of evidence shows that financial inclusion, measured by access to and utilization of formal financial services, is causally linked to poverty reduction, household resilience, and growth (Beck et al., 2007). The evidence from Demircuc-Kunt et al.'s (2022) Global Findex Database shows that access to formal financial services reduces households' vulnerability to income shocks, supports productive investments, and facilitates smoothing consumption, all of which are critical for addressing Nigeria's development challenges.

The pioneering study by Banerjee and Duflo (2011) shows that the poor are not passive recipients of financial exclusion; they are, in fact, active financial agents who manage sophisticated credit relationships to mitigate risks and invest in their livelihood strategies. The behavioral study is particularly important in understanding Nigerian consumers' engagement with BNPL as a quasi-formal credit service. More importantly, the development economics literature has long cautioned against conflating access to financial services with welfare improvements. The review by Banerjee et al. (2015) on microcredit's impact shows that access to credit services does not necessarily translate to improvements in household welfare and can sometimes exacerbate vulnerability.

The mobile money literature is the most similar context to the BNPL market in Nigeria in terms of the expected impact. The seminal paper by Jack & Suri (2014) on the impact of M-Pesa in Kenya shows the significant impact mobile financial services can have in reducing household vulnerability to income shocks, particularly in female-headed households. Aker & Mbiti's (2010) survey on the impact

of mobile phones on development in developing countries also points to the significant impact mobile money can have, although this depends on the development of the underlying infrastructure, regulation, and financial literacy.

2.5. Digital Credit in Developing Economies

The growth in digital credit in developing economies in Sub-Saharan Africa has provided a rich body of evidence, much of it cautionary in nature (Ozili, 2023). The case in Kenya is illustrative. The Central Bank of Kenya has reported widespread over-indebtedness in Kenya after the growth in short-term digital credit in the period from 2016 to 2019. The Central Bank of Kenya reported that “as a result of default in loan repayments, approximately 2.7 million Kenyans were listed as non-performing borrowers on the Credit Reference Bureau.” The recent regulatory intervention in Kenya in 2022, requiring all digital lenders to be licensed, is an interesting model for the kind of poverty-sensitive regulation being attempted by the Nigerian apex bank and FCCPC through the DEON Regulations.

The South African model, where the National Credit Act requires an assessment of affordability for all credit providers, shows how consumer protection is not incompatible with financial innovation. The model in Ghana, where there is a sandbox regulatory model for digital credit and mobile money infrastructure, is an interesting model for Nigeria. The expansion of digital finance in Egypt, under central government control, offers a contrasting model. These examples suggest that Nigeria is at a critical juncture where it must learn from the sequencing mistake of Kenya's rapid expansion without adequate regulatory foundation in place, while also learning from South Africa's cost-assessment requirements.

2.6. Household Vulnerability and Over-indebtedness

The body of literature on household financial fragility in the context of economic development offers critical context for understanding the vulnerability pathway of BNPL. In Schicks' (2014) groundbreaking paper on over-indebtedness in microfinance programs around the world, borrowers experience sacrifice over-indebtedness, where they make sacrifices in basic living standards, healthcare, and education to service debt even when they are not technically over-indebted. This subjective experience of financial vulnerability is closely related to this paper's measure of Perceived Financial Vulnerability. This experience of financial vulnerability has been demonstrated to have real welfare impacts that are independent of technical over-indebtedness.

Zinman's (2015) exhaustive review of household debt offers critical context for understanding household debt and over-indebtedness. Zinman's work points out that debt can either be productive debt, which smooths living standards or is used for investing in growth-enhancing activities, or distress debt, which is over-indebtedness that traps households in poverty. This paper's measure of the BNPL vulnerability pathway is closely related to Zinman's concept of distress debt.

2.7. Institutional Voids and Regulatory Capacity

To fully grasp the regulation of BNPL in Nigeria, there is a need to comprehend the concept of institutional voids, the absence of market-supporting institutions such as credit information systems, contract enforcement structures, and consumer protection bodies that are common in developed economies (Khanna & Palepu, 2010). This is not simply a matter of filling gaps in the market but rather changes the risk profile of the product and the strategy needed to protect consumers from potential harm.

In the context of microfinance regulation in developing economies, Cull et al. (2018) note that the development of effective microfinance regulations is dependent on the presence of not only effective regulations but also the institutional capacity to support such regulations. In the context of the FCCPC in Nigeria, the agency has less than 100 employees who are mandated with the task of protecting consumers in a country of over 200 million people. This is a significant institutional capacity challenge that is likely to impact the effectiveness of any regulation in the BNPL market in Nigeria and highlights the importance of self-enforcing approaches such as mandatory credit bureau reporting in the context of the market in Nigeria.

2.8. The Nigerian Development Context for Digital Credit

A thorough understanding of BNPL dynamics in Nigeria requires situating the analysis within the country's specific development context across five dimensions.

Dimension	Key Data Points	Sources
Poverty Profile	National poverty rate: 40.1%; Extreme poverty: 63% living below \$2.15/day; North-South gap: 72% poverty in North-East vs. 18% in South-West	NBS (2023); World Bank
Financial Exclusion	Overall exclusion: 36%; Gender gap: 40% women vs. 28% men excluded; Regional: 70%+ exclusion in some northern states	EFInA (2023)
Informal Economy	80% of workforce; 58% of GDP; 65% daily earners; 20% weekly; 15% irregular; Esusu participation: 40-60% of adults	ILO (2022); EFInA (2023)
Digital Infrastructure	Mobile penetration: 85%; Smartphone ownership: 40%; Internet cost: 9% of monthly income vs. 1% global average	GSMA; NCC
Regulatory Evolution	Key milestones: FCCPC Digital Lending Framework (2022); CBN FinTech Report (2025); DEON Regulations (2025); FCCPC enforcement capacity fewer than 100 staff nationally	CBN (2025); FCCPC (2022); Tope Adebayo LP (2025)

Table 1: Nigerian Development Context for Digital Credit

This contextual profile suggests that the BNPL in Nigeria is characterized by a context where the stakes of credit decisions are much higher than in developed countries, where the infrastructure for consumer protection is in its infancy, and where the segment of the population that would be most inclined by BNPL's inclusion promise are also the ones that would be most vulnerable to debt problems.

2.9. Hypothesis Development

In the following paragraphs, the researcher aims to develop three hypotheses that would test the central propositions of the contextual model and provide a comprehensive understanding of the unique factors affecting BNPL adoption in the context of the empirical gap and integrated theoretical model.

Hypothesis 1 (H1): Contextual Drivers of Adoption

The adoption intention of BNPL services among e-commerce consumers in Nigeria is significantly and jointly influenced by the perceived utility of BNPL as a solution for financial inclusion and the perceived convenience of BNPL's repayment options, but this is moderated negatively by the perceived risk of regulation.

H1a: The significant and positive impact of Perceived Financial Inclusion on adoption intention would be more significant among consumers who lack a formal credit history and/or bank account.

H1b: The significant and negative impact of Perceived Regulatory Risk on adoption intention would be more significant among consumers who possess higher levels of financial literacy.

Hypothesis 2 (H2): The Vulnerability Pathway

There is a significant and positive relationship between the usage of BNPL services and the perceived level of consumers' financial vulnerability in the market context of Nigeria.

Hypothesis 3 (H3): The Moderating Role of Financial Literacy: An individual's financial literacy plays a significant role in moderating the relationship between BNPL usage and perceived financial vulnerability. In this regard, it is proposed that the positive relationship between BNPL usage and perceived financial vulnerability will be reduced by high financial literacy.

3. Methodology

In this section, the research methodology and procedures used for empirically validating the research hypothesis are discussed. A quantitative survey methodology is used, keeping in mind the methodological rigor required for this study, in addition to its sensitivity to the socio-technical context of Nigeria.

3.1. Research Design and Rationale

In this study, a descriptive cross-sectional research design, employing a structured questionnaire, is considered the most suitable. This research design is best suited for this study since it allows for a large sample of geographically dispersed individuals to be surveyed at one point in time, thus enabling the assessment of relationships between the constructs of the model in their real-world context within the complex BNPL ecosystem of Nigeria. The survey research methodology is best suited for this study since it is aligned with its purpose of empirically validating a theoretical model employing quantitative data that is suitable for Structural Equation Modeling.

3.2. Population, Sampling, and Data Collection

Target Population: The study targets adult Nigerians, aged 18+ years, who have made at least one online transaction in the past 12 months and are aware of BNPL.

Sampling Technique and Procedure:

A multi-stage stratified technique of sampling was used to ensure national representativeness and capture critical socio-economic diversity.

- **Geographic Stratification:** The strata were defined by the six geopolitical zones of Nigeria. In this context, urban and peri-urban areas were targeted because they were e-commerce dependent.
- **Purposive Quota Allocation:** Quota allocation was used to ensure proportional representation across dimensions such as gender and age groups (18 to 35, 36 to 50, 50+), and employment status (formal employment, informal employment, and unemployment).
- **Recruitment Platform:** A structured online survey using partnerships with e-commerce platforms and social media sites, along with universities, was used. In addition to this, offline data collection also took place at commercial centers.

3.3. Measurement Instrument

The survey instrument used measured all dimensions using multi-item scales that were validated. Key dimensions and their operationalization are as follows:

1. **Perceived Financial Inclusion (PFI):** 5 items were used to measure this dimension. These items were adapted from the framework developed by Demircuc-Kunt et al. (2022) and EFInA.
2. **Perceived Regulatory Risk (PRR):** 4 items that reflect consumer concerns over data privacy, unfair data collection practices, and dispute resolution issues.
3. **Repayment Channel Convenience (RCC):** 3 items that examine the convenience of mobile money, USSD, and agent banking repayment channels.
4. **Attitude toward BNPL (ATT), Subjective Norm (SN), Perceived Behavioral Control (PBC):** Adapted from Ajzen (1991).
5. **BNPL Adoption Intention (BI):** A 3-item scale that measures respondents' intention to adopt or continue using BNPL.
6. **Perceived Financial Vulnerability (PFV):** A 5-item scale that measures respondents' perception of their household's financial vulnerability, adapted from Netemeyer et al. (2018).
7. **Financial Literacy (FL):** A 5-item scale that measures respondents' basic understanding of financial concepts like interest rates, inflation, and risk diversification in credit products, adapted from OECD/INFE (2022).
8. **Control Variables:** Demographics (age, gender, income), banking status (banked, underbanked, unbanked), experience of using informal credit products, and online shopping frequency.

Scale Validation: Rigorous scale validation was conducted, including expert validation by Nigerian academicians and FinTech practitioners, pilot testing of the scale on a sample of 150, followed by Confirmatory Factor Analysis to establish both convergent and discriminant validity, and reliability assessment by employing Cronbach's alpha and composite reliability. All reflective scales are

measured on a 7-point Likert scale ranging from 1 "Strongly Disagree" to 7 "Strongly Agree"; reverse-coded items are noted.

3.4. Data Analysis Plan

The data analysis was carried out in three stages. The data analysis tools used for this research were IBM SPSS 28 and AMOS 28.

1. Preliminary Analysis: In this stage, data cleaning for missing values, outliers, and normality assumptions was conducted. Descriptive statistics and correlation matrices for all variables in the study were carried out.
2. Measurement Model Validation: A Confirmatory Factor Analysis (CFA) was conducted on the measurement part of the full structural model to validate the multi-item scales in terms of validity and reliability.
3. Hypothesis Testing via Structural Equation Modeling (SEM): The full structural model was analyzed via SEM to test the paths in support of H1 and H2. In addition, MGA was conducted to test moderation effects for H1a, H1b, and H3.

4. Analysis and Results

4.1. Descriptive Statistics

The final sample consisted of 1,184 valid responses out of the targeted 1,200 distributed questionnaires, giving a response rate of 98.7%. Table 2 below shows a summary of the demographic profile of the respondents. From this, it is evident that this study's sample closely represents Nigeria's demographics for e-commerce, where 62.3% of respondents were aged between 18 and 35, 54.2% of the sample was male, and 48.7% of respondents were employed in the informal sector. It is interesting to note that 31.4% of this study's sample was unbanked or underbanked, a trend that is in line with research by EFInA (2023) that revealed that despite recent improvements in financial inclusion, about 26% of Nigeria's adult population is formally financially excluded.

The high rate of informal sector employment, at 48.7%, is a characteristic of Nigeria's economic situation, where about 80% of Nigeria's workforce is in the informal sector, meaning that they are not formally employed (ILO, 2022). This is a very important factor in understanding repayment capacity fluctuations in the context of BNPL, where income is structurally mismatched for repayment.

Characteristic	Category	Frequency (%)	Mean/SD
Age	18-25 years	298 (25.2%)	32.4 years (SD = 11.2)
	26-35 years	439 (37.1%)	
	36-45 years	287 (24.2%)	
	46+ years	160 (13.5%)	
Gender	Male	642 (54.2%)	
	Female	542 (45.8%)	
Employment	Formal sector	412 (34.8%)	
	Informal sector	577 (48.7%)	
	Unemployed	195 (16.5%)	
Banking Status	Fully banked	812 (68.6%)	
	Underbanked	271 (22.9%)	
	Unbanked	101 (8.5%)	
Prior BNPL Use	Never used	423 (35.7%)	

	1-2 times	312 (26.4%)	
	3-5 times	287 (24.2%)	
	>5 times	162 (13.7%)	

Table 2: Sample Demographics (N = 1,184)

4.2. Measurement Model Validation

To validate the psychometric properties of multi-item scales, Confirmatory Factor Analysis (CFA) was carried out. It was found that the measurement model had good fit indices: $\chi^2/df = 2.14$; CFI = 0.94; TLI = 0.93; RMSEA = 0.049 (90% CI = 0.042 to 0.056); and SRMR = 0.041. These are well above the conventional cut-off points for a good-fitting structural equation modeling-based research (Hair et al., 2019; Kline,

Construct	Items	Cronbach's α	Composite Reliability	AVE
Perceived Financial Inclusion (PFI)	5	0.87	0.89	0.62
Perceived Regulatory Risk (PRR)	4	0.84	0.86	0.61
Repayment Channel Convenience (RCC)	3	0.81	0.83	0.62
Attitude toward BNPL (ATT)	4	0.85	0.87	0.64
Subjective Norm (SN)	3	0.79	0.82	0.61
Perceived Behavioral Control (PBC)	4	0.83	0.85	0.59
BNPL Adoption Intention (BI)	3	0.88	0.90	0.69
Perceived Financial Vulnerability (PFV)	5	0.86	0.88	0.63
Financial Literacy (FL)	5	0.82	0.84	0.58

Table 3: Construct Reliability and Validity

All the constructs had higher levels of internal consistency and convergent validity than the recommended minimum of 0.70 and 0.50 respectively (Fornell & Larcker, 1981). Discriminant validity of the constructs was established through the Fornell-Larcker criterion, where the square root of AVE of each construct is higher than the correlation between any two constructs.

4.3. Structural Model and Hypothesis Testing

In the present study, the hypothesized relationships were tested using Structural Equation Modeling (SEM). Good structural model fit indices were obtained: $\chi^2/df = 2.31$, CFI = 0.93, TLI = 0.92, RMSEA = 0.052, SRMR = 0.048 (Hu & Bentler,

Hypothesis	Path	Std. β	SE	t-value	p-value	Decision
H1 Main Effects						
H1a	PFI $\rightarrow$ BI	0.42	0.04	11.05	<0.001	Supported
H1b	RCC $\rightarrow$ BI	0.28	0.04	6.83	<0.001	Supported

H1c	PRR → BI	-0.19	0.04	-4.32	<0.001	Supported
TPB Pathways						
	PFI → ATT	0.38	0.04	9.74	<0.001	
	PRR → ATT	-0.24	0.04	-5.71	<0.001	
	RCC → PBC	0.31	0.04	7.75	<0.001	
	ATT → BI	0.35	0.04	9.46	<0.001	
	SN → BI	0.18	0.04	4.19	<0.001	
	PBC → BI	0.22	0.04	5.50	<0.001	
H2: Vulnerability Pathway	Actual Usage → PFV	0.33	0.05	7.33	<0.001	Supported
H3: Moderation (Financial Literacy)	FL × Usage → PFV	-0.15	0.05	-2.88	0.004	Supported

Table 4: Structural Path Coefficients and Hypothesis Testing $p < 0.001$, $p < 0.01$, $p < 0.05$

The economic significance of these results needs to be made explicit. The results indicate that a one standard deviation increase in BNPL usage results in a 0.33 standard deviation increase in perceived vulnerability. This translates to a shift in perceived vulnerability from the 50th percentile to the 63rd percentile for a consumer in the sample at the median level of the vulnerability distribution. This represents a significant increase in household financial fragility. The increase in perceived vulnerability translates to a shift from "rarely worried" to "often worried" on the PFV scale, which represents a significant decrease in perceived welfare. Further, the results indicate that 64.3% of the e-commerce consumers in the sample have used BNPL; thus, the results also provide a population attributable fraction estimate, indicating that 21% of the vulnerability in the sample may be associated with BNPL usage. Applying these results to the 50 million e-commerce users in Nigeria, we estimate that there are 10.5 million consumers experiencing BNPL-attributable household financial fragility, which has direct relevance to the SDG1 "No Poverty" and SDG10 "Reduced Inequalities" targets.

4.4. Multi-Group Analysis: Testing Boundary Conditions

To test the hypotheses of H1a and H1b concerning the differential effects of the model across population segments, multi-group SEM analysis using a median split for financial literacy and banking status categorization was employed (Byrne, 2016).

Path	Group	β	SE	p-value
PFI → BI (H1a)	Unbanked/Underbanked	0.58	0.05	
	Fully Banked	0.31	0.05	<0.001
PRR → BI (H1b)	High Financial Literacy	-0.31	0.06	
	Low Financial Literacy	-0.12	0.05	0.011

Table 5: Multi-Group Comparison Results

The results offer empirical support for the hypothesized moderating effects. The impact of Perceived Financial Inclusion on adoption intention is more significant among unbanked/underbanked consumers ($\beta = 0.58$) than fully banked consumers ($\beta = 0.31$), thereby supporting H1a: BNPL is a vital entry point for the formally excluded segment of consumers (Ozili, 2023). In contrast, the impact

of Perceived Regulatory Risk is more significant in negatively influencing adoption intention among financially literate consumers ($\beta = -0.31$) than less financially literate consumers ($\beta = -0.12$), thereby supporting H1b. This indicates that financially literate consumers are more sensitive to the absence of regulations and hence more risk-averse in their adoption decision-making, in line with the risk perception construct in the context of the emerging fintech market in Indonesia (Sriyono et al., 2025).

4.5. Heterogeneous Effects by Population Segment

Table 6 reports the relationship between BNPL and vulnerability for important segments of the population. From this exercise, it is clear that the effects of vulnerability that are evident at aggregate levels hide significant heterogeneity, which is of considerable policy relevance for development.

Population Segment	N	β	95% CI	Policy Implication
Full sample	1,184	0.33***	[0.24, 0.42]	Universal safeguards needed
Low financial literacy	592	0.41***	[0.30, 0.52]	Target literacy interventions
High financial literacy	592	0.26***	[0.17, 0.35]	Literacy as protective factor
Unbanked/Underbanked	372	0.38***	[0.27, 0.49]	Inclusion and protection required
Fully banked	812	0.29***	[0.20, 0.38]	Lower but still significant
Informal sector workers	577	0.39***	[0.28, 0.50]	Flexible repayment structures needed
Formal sector workers	607	0.28***	[0.19, 0.37]	Standard terms may suffice

Table 6: BNPL-Vulnerability Effects by Population Segment (Usage $\rightarrow$ PFV) $p < 0.001$; all segment effects remain significant after Bonferroni correction.

4.6. Indirect Effects and Mediation Analysis

Bootstrapping procedures (5,000 resamples) revealed significant indirect effects through TPB constructs (Preacher & Hayes, 2008):

Pathway	Indirect Effect	95% CI	Proportion of Total Effect
PFI $\rightarrow$ ATT $\rightarrow$ BI	0.133	[0.098, 0.172]	31.7%
PRR $\rightarrow$ ATT $\rightarrow$ BI	-0.084	[-0.112, -0.059]	44.2%
RCC $\rightarrow$ PBC $\rightarrow$ BI	0.068	[0.046, 0.094]	24.3%

Table 7: Standardized Indirect Effects

This finding reinforces the notion that the contextual constructs mediate the TPB constructs in a partial manner but also have significant direct effects, hence the need to add context-relevant constructs to the proposed framework (Ajzen, 1991).

Discussion

5.1. Interpretation of Findings

This research presents the first large-scale investigation into BNPL adoption behaviors in Nigeria, revealing several theoretically meaningful and practically useful results. The current research strongly supports the contextual TPB construct by showing that Perceived Financial Inclusion, Repayment Channel Convenience, and Perceived Regulatory Risk together account for 67% of the variance in

BNPL adoption intention ($R^2 = 0.67$), which is substantially higher than what the original TPB predicts in Western societies (Mishra et al., 2022).

5.1.1 The Primacy of Financial Inclusion Perception

The most significant predictor for BNPL adoption intention is Perceived Financial Inclusion ($\beta = 0.42$), especially in the context of the unbanked segment, whose effect size nearly doubles ($\beta = 0.58$). BNPL is not just a payment option but a digital financial inclusion tool in Nigeria. In Nigeria, 26% of the adult population is unbanked, whereas 22.9% are underbanked (EFInA, 2024). BNPL is, in essence, a gateway to formalized credit services, which has significant implications for the UN's SDG 1: No Poverty and SDG 10: Reduced Inequalities targets. This resonates with the CBN's (2025) acknowledgment that "Fintech innovations have provided access to the excluded segment of the market, although this comes with some risks."

5.1.2 Infrastructure as Adoption Constraint

The second most significant predictor for BNPL adoption intention is Repayment Channel Convenience ($\beta = 0.28$), which highlights the infrastructure-driven aspect of digital financial inclusion in Nigeria. In developed markets, BNPL repayments are made via credit cards or electronic bank transfers, which is not the case in Nigeria, where mobile money, USSD codes, and agent networks pose specific challenges (CBN, 2025). The large indirect effect via Perceived Behavioral Control provides further evidence that infrastructure compatibility indeed translates into a stronger perceived financial ability, a construct that is more applicable in the present context than the standard ease of use construct in the original TAM framework.

5.1.3 Regulatory Uncertainty as a Barrier

Perceived Regulatory Risk is an important barrier to BNPL adoption ($\beta = -0.19$), and for financially literate consumers, it is an especially sensitive factor ($\beta = -0.31$ vs. -0.12 for less literate consumers). The regulatory framework is in disarray, with both the CBN, FCCPC, and various money lending regulations at the state level imposing overlapping and inconsistent regulations (Primrose Den, 2025). The fact that the CBN in 2025 acknowledged "the speed of growth has outpaced regulatory safeguards" (CBN, 2025, p. 12) only serves to confirm consumer perceptions of risk.

5.2. The Vulnerability Pathway and Protective Factors

Support is found for Hypothesis 2, where actual BNPL adoption is positively associated with Perceived Financial Vulnerability ($\beta = 0.33$). The results confirm research by the Federal Reserve Bank of Kansas City, where it was determined "96% of BNPL users who have late payments have at least mild financial constraints; 15% have severe constraints" (Hayashi & Routh, 2025). In the Nigerian context, where income instability affects almost half of the sample (48.7% in informal employment), regular repayments in BNPL create predictable tension with irregular income flows (ILO, 2022).

The heterogeneous results in Table 6, where workers in the informal sector have a much stronger vulnerability effect ($\beta = 0.39$) than those in the formal sector ($\beta = 0.28$), highlight how the incompatibility between BNPL repayment schemes and income in the informal sector is an important channel for explaining household financial fragility.

Most importantly, Hypothesis 3 verifies the role of financial literacy as a protective factor. The negative interaction effect ($\beta = -0.15$) shows that greater digital credit management ability offsets the effects of BNPL on household vulnerability. The relevance of this interaction effect is further highlighted by Nigeria's challenges in financial literacy. The EFInA survey in 2023 finds that while financial inclusion has achieved an impressive level of 74% in Nigeria, there is room for improvement in the quality of such inclusion. The implication for development is clear. Financial literacy is not just an important accompaniment to the expansion of BNPL but is actually a necessary precondition for ensuring that DFI translates into improvements in welfare, not financial fragility.

5.3. Theoretical Contributions

1. **Contextualized Technology Adoption Theory:** Through the inclusion of Perceived Financial Inclusion and Perceived Regulatory Risk in the TPB framework, the present study confirms that the

development of DFI-related theories needs to be systemically contextualized in order to be applicable in the context of emerging markets.

2. **Financial Inclusion as a Behavioral Construct:** The development and validation of the construct of Perceived Financial Inclusion as a precursor to the adoption of fintech-based products/services constitutes a new theoretical contribution to the field of DFI-related studies, as it has been established that the construct of financial inclusion exists at the micro-level behavioral construct (Demirguc-Kunt et al., 2022; Ozili, 2023).
3. **The Dark Side of Inclusion:** The established link between BNPL usage and household financial fragility, tempered by financial literacy, contributes to the growing body of research on the dark side of fintech inclusion. The study supports the proposition that inclusion can lead to greater rather than less financial fragility for consumers, a proposition also expressed in the BluePeak concern regarding the development of BNPL in Africa (BluePeak, 2024).
4. **Development Policy Contribution:** The study's contribution to rethinking BNPL usage through the SDG framework and its welfare effects in poverty-relevant domains establishes the first empirical basis for evidence-based poverty-sensitive regulation of digital credit in Nigeria. The heterogeneous results provide the basis to identify the relevant segments of the population where the regulation and educational efforts should be targeted.
5. **Policy Framework for Inclusive Digital Credit**

In the following section, a framework for the implementation of BNPL in a manner conducive to rather than detrimental to development in Nigeria will be developed based on the study's findings and development economics principles. The framework will be presented in four domains in Table 8. Consideration will be given to implementation realism in light of the constraints on regulatory capacity in Nigeria.

Domain	Recommendation	Evidence Base	Agency	Timeline
Regulatory Architecture	Mandatory credit reporting integration	33% hold multiple loans (finding)	CBN, NIBSS	12-18 months
	Standardized disclosure in local languages	Literacy moderation effect ($\beta = -0.15$)	FCCPC	6 months
	Inter-agency coordination mechanism (CBN-FCCPC)	Regulatory fragmentation identified	CBN, FCCPC	3 months
Financial Inclusion	Targeted financial literacy for BNPL users	Low literacy: $\beta = 0.41$ vulnerability	CBN, NFIS	Ongoing
	Repayment flexibility for informal sector (variable dates aligned with market cycles)	Informal sector: $\beta = 0.39$; 48.7% of sample	BNPL providers	Immediate
	Integration with esusu groups and community networks	Cultural familiarity with informal credit	Providers + community	Pilot 12 months
Consumer Protection	Dispute resolution mechanism for BNPL users	PRR deters adoption ($\beta = -0.19$)	FCCPC	12 months
	Data privacy certification standard	Privacy concerns in PRR construct	NITDA	18 months
	Debt collection standards and enforcement	Vulnerability pathway (H2)	FCCPC	6 months
Monitoring and	BNPL tracking in national	Evidence gap on	NBS, EFinA	Next survey

Evidence	financial surveys (NBS, EFInA)	poverty effects		cycle
	Mandatory impact assessments for providers above threshold	No current data on welfare effects	CBN	24 months

Table 8: Policy Matrix for Poverty-Sensitive BNPL Regulation in Nigeria

6.1. Implementation Realism and Phased Approach

The capacity of Nigeria's regulatory agencies is extremely limited. For instance, the FCCPC has less than 100 staff to manage a country of over 200 million people, and the CBN's digital lending oversight body has limited capacity relative to the growth in the market.

1. Phase 1 (0 to 6 months): Low-cost administrative interventions such as interagency coordination meetings, development of a disclosure template, and enforcing debt collection laws under existing powers.
2. Phase 2 (6 to 18 months): Implementing regulations that involve new guidance or legislative changes, including the credit bureau connectivity mandate, affordability assessment regulations, and dispute resolution mechanisms.
3. Phase 3 (18 to 36 months): Capacity building, including increasing the staff of the FCCPC, BNPL inclusion in national surveys, and making provider impact assessments mandatory.
4. Estimated cost of credit registry integration: 500 million naira; additional FCCPC regulatory capacity: 50 million naira annually, which could be funded by a fintech industry levy or development partners.

6.2. African Comparative Context and Lessons for Nigeria

Country	Penetration	Regulatory Approach	Key Findings/Issues	Source
Nigeria	Rapid growth; 64.3% e-commerce awareness	Evolving: DEON Regulations 2025	Inclusion-driven; household vulnerability concerns; regulatory fragmentation	This study
Kenya	Mature digital credit	Digital lenders regulated 2022 (CBK)	Over-indebtedness documented; 2.7M CRB-listed defaulters	CBK reports
South Africa	Established	National Credit Act: affordability assessments mandatory	Consumer protection co-exists with innovation	NCR data
Ghana	Emerging	Sandbox regulatory approach	Mobile money integration model	Bank of Ghana
Egypt	Limited	Central bank oversight; state-led	State-led digital finance expansion	CBE

Table 9: African BNPL/Digital Credit Comparative Context

Kenya's experience provides the most instructive cautionary case for Nigeria. The over-indebtedness crisis resulting from the unregulated expansion of digital credit between 2016 and 2019 highlights the need for credit reporting infrastructure before the expansion of BNPL products in Nigeria. South Africa's mandatory affordability assessment provides a framework that Nigerian regulations should include, such as the need to verify the income of BNPL customers seeking credit above a set credit threshold. Ghana's mobile money integration provides a positive case study for Nigeria to learn from in the development of a more effective infrastructure.

7. Conclusion

This study has established that the uptake of BNPL in Nigeria is fundamentally different from the Western experience, driven by the need for financial inclusion rather than the quest for convenience, and limited by infrastructure compatibility and a lack of trust in regulations. Through the empirical validation of a contextualized theoretical framework that draws on the experience of 1,184 e-commerce consumers, the study has established four core findings that are directly applicable to the achievement of Nigeria's SDG targets and poverty reduction strategy.

- Perceived Financial Inclusion is the strongest driver of BNPL adoption, especially among Nigeria's large unbanked population, which positions BNPL not only as a payment innovation but also as a platform for financial inclusion (EFInA, 2024; Ozili, 2023). This has important implications for SDG 1.4 (Financial Inclusion) and SDG 8.10 (Access to Financial Services).
- Repayment Channel Convenience, which is heavily influenced by Nigeria's mobile money infrastructure, is also an important driver of BNPL adoption via perceptions of improved digital credit management capacity (CBN, 2025).
- Perceived Regulatory Risk is a disinfluencer of BNPL adoption. Financially literate consumers exhibit greater sensitivity to regulatory oversight failures. This suggests that regulatory credibility is a competitive advantage and a prerequisite for BNPL market development (Primrose Den, 2025; Sriyono et al., 2025).
- BNPL adoption is associated with increased household financial fragility. However, this relationship is strongly moderated by financial literacy, which is critical in emerging market BNPL market development and a prerequisite for SDG 10 (Reduced Inequalities) (Hayashi & Routh, 2025; Hung & Khoi, 2025).

The implications of this study add to the body of work in fintech studies by affirming the need for theories of adoption that take context into account. This is because individual-level theories of behavior must incorporate systemic factors such as financial inclusion ecosystems, regulatory frameworks, and payment systems (Ajzen, 1991; Venkatesh et al., 2012). In terms of Nigeria's context, this study is coming at an opportune time when the CBN (2025) acknowledged regulatory loopholes in its financial industry. In addition, the FCCPC's implementation of DEON regulations and growth projections to \$18.68 billion in 2031 make e-commerce an attractive market.

7.1. Limitations

This study recognizes several limitations to its design, which are important to acknowledge in interpreting results or designing future research. Firstly, the study does not directly measure poverty or wealth at the household level, which limits its capacity to evaluate the differential effects of BNPL across the welfare distribution. Future research should incorporate wealth indices or consumption expenditure data in conformity with the national poverty measurement framework in Nigeria. Secondly, the study only focuses on consumers in the e-commerce segment, which might be relatively better off than the larger category of non-e-commerce consumers who are likely to be poorer and more vulnerable. Thirdly, the study design does not permit causal analysis of the consumption usage-vulnerability link; a study design that follows consumers through multiple cycles of BNPL repayments would be more powerful in establishing causal links. Fourthly, the subjective nature of the vulnerability measure might not perfectly map onto objective outcomes like payment delinquency or asset liquidation. Fifthly, the results might not be generalizable to other African countries due to unique national characteristics.

7.2. Future Research Agenda

There is a pressing need for nationally representative survey data that relates digital credit to objective welfare outcomes, allowing for more rigorous evaluation of poverty impact. Some research questions that could be answered in future research include:

- (1) A panel study of BNPL users over 2 to 3 years to assess whether digital credit is used for smoothing consumption or creating poverty traps.
- (2) An evaluation of the gender dimensions of BNPL's welfare effects, which is relevant for SDG5: Gender Equality.
- (3) Randomized control trials of whether financial literacy training in BNPL can mitigate vulnerability.
- (4) An evaluation of how BNPL complements or crowds out traditional forms of esusu credit.

(5) Comparative cross-country research on what regulations optimize the inclusion-protection trade-off.

As Nigeria and similar emerging economies seek a balance between the development of digital financial inclusion facilitated by FinTech advancements and poverty sensitivity in the regulations, the present research aims to provide a factual basis for the decisions taken in the process. Indeed, the evidence suggests that the “tremendous potential of BNPL in achieving the sustainable development goals of SDG 1 – No Poverty, SDG 8 – Decent Work, and SDG 10 – Reduced Inequalities cannot be seen without the equally tremendous potential of BNPL to cause harm, and the achievement of the former while minimizing the latter requires intervention in the realms of regulations, providers, and education” (BluePeak, 2024; CBN, 2025; World Bank, 2022).

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