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Original Article

Farmers' Preferences for an Agricultural Loan Product: A Conjoint Analysis

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Abstract

This study investigated how farmers in Digos City, Davao del Sur, value key attributes of agricultural loan products so that lenders can craft farmer-centred credit solutions. Using a full-profile, fractional-factorial conjoint experiment, 290 small-holder farmers rated 29 orthogonally generated loan profiles that varied by terms and interest rate, mode of payment, collateral requirement and delinquency penalty. Part-worth utilities were estimated with an additive model. Mode of payment emerged as the dominant driver of choice (≈33 %), with annual and semi-annual schedules most preferred. Collateral stringency and loan tenor–interest combinations ranked next, whereas penalty timing exerted the least influence. Utility reconstruction identified the optimal package as a 10-year loan at 2 % annual interest, secured only by a co-maker, repayable annually, with penalties triggered after maturity. Packages requiring land titles plus vehicle papers, monthly instalments and early penalties produced the lowest utility. These findings underscore the importance of synchronizing repayment calendars with crop cash-flow cycles and minimising collateral barriers to expand formal credit uptake. Ultimately, tailored financing is pivotal for sustaining rural livelihoods and achieving local food-security goals.

Keywords

agricultural credit; conjoint analysis; farmer preferences; loan design; Philippines

INTRODUCTION

Agricultural financing is essential for enhancing agricultural output as it finances the acquisition of seeds, equipment, and land necessary for producers to modernize their operations (Mersha & Ayenew, 2018). Ironically, the smallholders most in need of financing have the greatest obstacles: persistent capital shortages, increased default risk, and limited growth opportunities notwithstanding yield enhancements (Sebayang et al., 2019). Elevated transaction costs, onerous bureaucratic processes, and inadequate physical accessibility exacerbate exclusion from formal finance, hindering sector-wide growth (Khanal & Omobita, 2020). Experience demonstrates that when lenders design favorable loan packages, banks and

cooperatives can serve as significant catalysts for rural development (Kadaba et al., 2023; Win, 2024). Identifying the conflict between the transformative potential of credit and its restricted accessibility establishes a foundation for an in-depth examination of farmer-centered product design.

Cross-national research substantiates the necessity of customizing loans to align with farmer preferences. Agricultural financing in Pakistan stimulates investment in inputs and ensures food security; nevertheless, hardly 6.5% of smallholders are eligible due to the enduring complexities of documentation and stringent collateral requirements (Elahi et al., 2018; Mahmood et al., 2019). Formal loans are predominantly accessed by large landlords, whilst small farmers depend on informal networks, despite both avenues having the potential to enhance technical efficiency and output (Chandio & Jiang, 2018; Dunya et al., 2019). This dualistic credit market demonstrates how design and delivery mechanisms influence the beneficiaries of financial services. Without a detailed comprehension of attribute trade-offs—such as interest rates, duration, and collateral—policymakers may inadvertently sustain disparities. Consequently, inclusive finance policies should commence with an evidence-based evaluation of borrower priorities.

A similar "agricultural credit gap" challenges Philippine smallholders. Insufficient operating capital, fragmented land ownership, minimal crop insurance, and lenders' apprehensions regarding repayment inhibit formal credit availability (Floro, 2019; Capacio et al., 2021). The Philippine Development Plan 2017-2022 aims for expanded loan access; nevertheless, institutional reforms frequently exceed practical realities, resulting in implementation obstacles. Financial literacy among farmers somewhat mitigates these challenges: self-assessed literacy enhances repayment discipline but may redirect limited resources from pressing household necessities, revealing a precarious welfare trade-off (Sanglay et al., 2021). These interconnected limits highlight the necessity for loan packages that address both supply-side risk indicators and demand-side livelihood dynamics. Addressing this gap necessitates empirical understanding of how particular loan characteristics align with farmers' economic circumstances.

In this national context, cultivators in Digos City, Davao del Sur, face significant capital deficiencies, challenges in securing inexpensive loans, and persistent repayment pressures. The agricultural industry of the region, characterized by small and medium-sized fruit and rice farmers, generates highly seasonal cash flows; thus, mismatched repayment schedules exacerbate default risk despite advantageous gross margins. Collateral regulations that require titled land further marginalize tenants and lessees, compelling them to seek informal lenders. Local cooperatives and rural banks navigate a delicate balance between regulatory compliance and developmental objectives. Comprehending the interplay between loan attributes—tenor, interest, collateral, payment mechanism, and penalty timing—and the on-farm realities in Digos City is essential for product innovation.

In light of the misalignment of credit products and persistent capital deficiencies, this study focuses on a specific inquiry: how do smallholder farmers in Digos City, Davao del Sur, assess the competing attributes of an agricultural loan when credit is limited yet essential? The study employs a conjoint analysis paradigm that regards each loan as a collection of attributes, allowing for the disentanglement and quantification of perceived value. It specifically assesses the relative significance of four design levers—interest rate, repayment schedule, collateral requirement, and delinquent penalty—enabling lenders to identify which factors enhance or diminish demand. The research assesses individual-level and aggregate utility models to determine if preference variability is significant enough to justify segmented loan packages or if a single optimized package will enough for the majority of borrowers. The study identifies the best and least appealing characteristic combinations, offering an evidence-based

framework for financing programs that are commercially viable for banks and genuinely accessible to farmers.

This study utilizes Rational Choice Theory (Friedman & Hechter, 1990) and Choice Theory (Glasser, 1999) to assert that farmers will choose the credit bundle that optimizes expected utility within their restrictions. Random Utility Theory (McFadden, 2012) enhances this assertion by conceptualizing choice as a probabilistic result of latent preferences and observable characteristics, rendering discrete-choice methodologies like conjoint analysis optimal for extracting part-worth utilities (Hoyos, 2010). This theoretical triangulation validates the analytical approach while grounding farmer decisions in behavioral economics. Measuring attribute significance reflects the intricate considerations smallholders employ in weighing affordability, flexibility, and risk. In addition to descriptive preference rankings, the system provides predictive capabilities for modeling market adoption of various loan structures.

Thus, the research provides three tangible contributions. Initially, it provides farmers with explicit, empirical direction for loan structures that correspond with their production cycles and risk appetite. Secondly, it furnishes banks, cooperatives, and investors with pragmatic evidence for designing inclusive loan programs that harmonize commercial profitability with developmental impact. Third, it enhances emerging Philippine literature on rural finance by providing a reproducible analytical framework for other locations. These outcomes collectively seek to reduce the agricultural credit gap, enhance farm resilience, and promote local food-security objectives—ensuring that finance serves as a catalyst for sustainable rural development.

METHODS

This investigation adopted a descriptive quantitative design that relies on conjoint-analysis principles to map how farmers value competing agricultural-loan attributes. Descriptive designs are appropriate when the researcher seeks to characterize attitudes and choice patterns numerically without manipulating conditions (Brandenburg, 2013). By treating each loan as a bundle of features—tenor-and-interest, repayment schedule, collateral requirement, and timing of delinquency penalties—the study elicited preference ratings that can later be decomposed into part-worth utilities. A full-profile presentation was chosen to mimic real-world decision making, yet the overwhelming number of potential profiles was trimmed through a fractional-factorial, orthogonal array generated in IBM SPSS Statistics. This strategy preserved attribute independence while reducing respondent burden, thereby safeguarding both internal validity and ecological realism (Galanty et al., 2020; Sibiko et al., 2018).

Participants were 290 legally adult farmers—owners or tenant operators—based in Digos City, Davao del Sur. Stratified random sampling ensured that smallholders from different barangays and crop systems were proportionately represented; such a sample comfortably exceeds the 150-respondent threshold usually recommended for stable conjoint estimation (Toubia, 2018). Digos City's economy is dominated by small and medium-scale producers who confront seasonal cash-flow variability, sparse collateral, and limited access to formal credit. Capturing preference data in this locale therefore offers context-sensitive evidence for lenders seeking to design viable loan packages that align with the lived realities of Philippine smallholders (Mwonge & Naho, 2021).

Instrument development unfolded in three stages. First, semi-structured Key Informant Interviews with experienced farmers, extension workers, and local lenders surfaced the attributes most salient to credit decisions (Ogouvide et al., 2020; Saarijärvi & Bratt, 2021).

Second, a pilot test with ten informants refined wording and confirmed that attribute levels were realistic, comprehensible, and capable of eliciting discriminating responses (Bell et al., 2018). Third, SPSS produced twenty-nine orthogonal plan cards; twenty-five profiles—including four holdouts for validity checking—were printed on individual cards and rated on a five-point scale from *Not preferred* (1) to *Most preferred* (5). Respondent socio-demographic items preceded the card ratings so that subgroup analyses could later be explored. The final attribute structure is summarized in Table 1.

Table 1. *Selected Agricultural-Loan Attributes and Levels Used in the Conjoint Experiment*

Attribute	Level Code	Level Description
Terms & Interest Rate	1	3-5 yr loan, 1.5 % interest *quarterly*
	2	5 yr loan, 1.5 % *semi-annual* interest
	3	8 yr loan, 1.5 % *annual* interest
	4	10 yr loan, 2 % *annual* interest
Mode of Payment	1	Monthly instalments
	2	Quarterly instalments
	3	Semi-annual instalments
	4	Annual instalments
Collateral	1	Co-maker only
	2	Land title with co-maker
	3	Land title (no co-maker)
	4	OR/CR † with co-maker
	5	Land title and OR/CR
Delinquency Penalty	1	Applied after grace period
	2	Applied after maturity date

† OR = Official Receipt; CR = Certificate of Registration (vehicle papers).

Data collection began once formal letters of permission were approved by the school's branch operations office and the Department of Business Administration. Enumerators approached sampled farmers in person, explained the study's aims, secured written informed consent, and either left the questionnaire for self-completion or, where literacy was limited, read each plan card aloud and recorded the rating. Completed instruments were reviewed for completeness on-site, transported in sealed envelopes, and double-entered into a password-protected database. Ongoing oversight from a statistical consultant ensured data integrity and facilitated early detection of coding anomalies.

Profile ratings were analyzed with SPSS's CONJOINT/SCORE procedures. An additive model decomposed each respondent's ratings into part-worth utilities; attribute importance weights were then derived from the utility ranges. Holdout profiles allowed calculation of Pearson correlations between observed and model-predicted ratings as an internal validity check. Individual utilities were aggregated to obtain city-level preference functions, after which utility reconstruction identified the most and least favored loan combinations. These simulations offer lenders concrete guidance on product features that either expand or dampen demand (Gani et al., 2020; Kiring'a et al., 2021).

Ethical safeguards were integral throughout. Participation was voluntary, anonymity was preserved by numeric coding, and all files were handled in compliance with the Data Privacy Act of 2012. Participants were free to decline or withdraw without penalty, and no deceptive practices were used. Drafts were screened with plagiarism-detection software; data were reported exactly as collected, with no fabrication or falsification. The study declared no conflicts of interest, and authorship credit reflected substantive contributions to conception, data collection, analysis, and manuscript preparation, aligning with standard ethical guidelines for scholarly integrity.

RESULTS AND DISCUSSION

The conjoint model yielded a satisfactory internal fit (hold-out correlation = .87, $p < .001$) and revealed a clear hierarchy of attribute salience (see Table 2). Farmers weighted the mode of payment most heavily (32.99 %), followed by collateral requirements (28.47 %), terms-and-interest rate (22.03 %), and delinquency-penalty timing (16.51 %). These magnitudes indicate that repayment structure and collateral hurdles dominate loan choice, whereas penalty provisions, though still meaningful, play a comparatively smaller role.

Table 2. *Relative Importance and Utility Estimates of Agricultural-Loan Attributes (N = 290)*

Attribute	Importance (%)	Level (code)	Utility (u)	SE
Terms & Interest Rate	22.03	3–5 yr, 1.5 % qtr. (1)	0.01	0.13
		5 yr, 1.5 % semi-ann. (2)	0.02	0.26
		8 yr, 1.5 % ann. (3)	0.02	0.40
		10 yr, 2 % ann. (4)	0.03	0.53
Mode of Payment	32.99	Monthly (1)	0.27	0.13
		Quarterly (2)	0.57	0.26
		Semi-annual (3)	0.81	0.40
		Annual (4)	1.07	0.53
Collateral	28.47	Co-maker only (1)	−0.17	0.11
		Land title + co-maker (2)	−0.34	0.22
		Land title only (3)	−0.51	0.33
		OR/CR + co-maker (4)	−0.68	0.43
		Land title + OR/CR (5)	−0.85	0.54
Delinquency Penalty	16.51	After grace period (1)	0.38	0.31
		After maturity date (2)	0.75	0.63
(Constant)			1.93	0.70

Note. Positive utilities indicate higher preference; negative utilities indicate lower preference relative to the attribute mean. OR/CR = Official Receipt & Certificate of Registration (vehicle papers).

Consistent with earlier evidence that smallholders prefer repayment schedules aligned with harvest cash-flow cycles (Taneja et al., 2019; Johnson et al., 2019), respondents assigned progressively higher utilities to less-frequent payment options. Annual instalments produced the largest positive part-worth (u = 1.07), followed by semi-annual (u = 0.81), quarterly

(u = 0.57), and monthly (u = 0.27) plans. The steep utility gradient suggests that any shift toward monthly servicing would require substantial compensating benefits elsewhere in the loan package. Such findings reinforce calls for calendar-matched credit products that stabilize farm liquidity and reduce default risk (Kassegn & Endris, 2022).

The terms-and-interest attribute ranked third but still exerted meaningful influence. Farmers expressed a modest but monotonic preference for longer maturities with favorable rates, culminating in the 10-year/2% annual option (u = 0.03). Although the part-worth increments are numerically smaller than those for payment mode, they confirm that extended amortization horizons are valued for capital-heavy farm investments whose payback periods span multiple cropping cycles (Hening et al., 2019). Thus, improving access to long-tenor, low-rate instruments remains central to sustainable agricultural intensification (Abraham & Pingali, 2020).

Collateral considerations generated the widest utility spread (*range* = 1.02). The baseline requirement of a co-maker only yielded the highest positive utility (u = –0.17, relative to the attribute mean of zero), whereas the combination of land title plus vehicle papers was strongly disfavored (u = –0.85). These results echo studies showing that stringent collateral demands inhibit credit uptake among asset-poor farmers (Balana & Oyeyemi, 2020) and can stifle entrepreneurial expansion (Kiai et al., 2019). Policymakers could therefore boost financial inclusion by recognizing alternative forms of guarantee—such as movable assets, warehouse receipts, or group liability schemes—in lieu of formal land titles.

Although delinquency-penalty timing carried the lowest importance weight, farmers still differentiated meaningfully between the two alternatives. A penalty assessed after the loan's maturity date attracted a higher utility (u = 0.75) than a penalty triggered after a shorter grace period (u = 0.38). Farmers may perceive the latter as abrupt and destabilizing, whereas the former affords predictable consequences and planning time (Carter et al., 2022; Kane, 2021). Transparent, well-sequenced sanctions are likewise linked to improved repayment discipline in agricultural portfolios (Boehlje, 2019).

The model constant ($\beta_0 = 1.93$, SE = 0.70) represents respondents' baseline inclination toward the concept of an agricultural loan, independent of specific attributes. Taken together, the findings paint a coherent picture of seasonally sensitive, collateral-averse borrowers who nonetheless value long-term, low-cost capital and clear contractual penalties. Aligning loan design with these priorities could narrow the persistent credit gap documented among Philippine smallholders (Cassidy & Fafchamps, 2020) and enhance portfolio performance for rural lenders (Shetty, 2022).

Table 3 illustrates how baseline attitudes and attribute trade-offs vary across the three exemplar farmers relative to the city-wide aggregate model. The constant terms—Client 1 = 1.89, Client 2 = 1.96, Client 3 = 2.03, Aggregate = 1.93—signify a uniformly positive disposition toward taking an agricultural loan even before specific features are considered, echoing the notion that credit is viewed as a productivity-enhancing resource (Samant & Seo, 2019). Although these intercepts differ only modestly, they foreshadow subtle heterogeneity in how borrowers perceive risk and opportunity (Kehinde et al., 2021).

Terms and interest rates reveal the greatest divergence. Client 1 assigns progressively higher utilities to longer tenors with annual repricing, culminating in a strong preference for a 10-year loan at 2% interest (u = 0.31). This pattern is consistent with farmers who finance long-gestation investments and therefore value amortization flexibility

(Cherotich et al., 2022). By contrast, Clients 2 and 3 respond negatively to the same long-term options—the utility for the 10-year plan drops to -0.75 and -0.92, respectively—implying a risk-averse stance that favors quicker principal turnover (Barry, 2019). These contrasts underscore that tenor and repricing frequency should be tiered rather than offered as a one-size-fits-all package (Gichuki & Kamau, 2022; Nadew & Senapathy, 2023).

Table 3. *Individual and Aggregate Utility Estimates for Agricultural-Loan Attribute Levels (N = 290)*

Attribute & Level	Client 1	Client 2	Client 3	Aggregate
(Constant)	1.891	1.960	2.031	1.934
Terms & Interest Rate				
3–5 yrs @ 1.5 % (qtr.)	0.076	−0.188	−0.229	0.008
5 yrs @ 1.5 % (semi-ann.)	0.153	−0.376	−0.459	0.015
8 yrs @ 1.5 % (ann.)	0.229	−0.565	−0.688	0.023
10 yrs @ 2 % (ann.)	0.306	−0.753	−0.918	0.031
Mode of Payment				
Monthly	0.282	0.194	0.388	0.268
Quarterly	0.565	0.388	0.776	0.573
Semi-annual	0.847	0.582	1.165	0.805
Annual	1.129	0.776	1.553	1.074
Collateral Requirement				
Co-maker only	−0.160	−0.080	−0.260	−0.170
Land title + co-maker	−0.320	−0.160	−0.520	−0.340
Land title only	−0.480	−0.240	−0.780	−0.510
OR/CR + co-maker	−0.640	−0.320	−1.040	−0.680
Land title + OR/CR	−0.800	−0.400	−1.300	−0.850
Delinquency Penalty Timing				
After grace period	0.200	0.533	0.400	0.376
After maturity date	0.400	1.067	0.800	0.753

Across all models the mode of payment retains a monotonic, positive slope: utilities climb from monthly to annual instalments, confirming that reduced payment frequency mitigates cash-flow stress (Shee et al., 2019). Client 3 exhibits the steepest gradient (annual $u = 1.55$), suggesting heightened sensitivity to administrative or liquidity burdens, whereas Client 2 registers the shallowest (annual $u = 0.78$). The aggregate utilities (annual $u = 1.07$) fall between these extremes, indicating that an annual option would satisfy the majority while still accommodating minority preferences for semi-annual or quarterly schedules (Bougherara et al., 2021).

Utility scores for collateral policy are uniformly negative and become more unfavorable as requirements tighten, validating prior evidence that stringent guarantees deter credit uptake (Vishnu & Sekar, 2024). Client 2 is comparatively tolerant (OR/CR + co-maker $u = -0.32$), yet Client 3 reacts sharply, assigning −1.30 to the most onerous combination of land title plus

vehicle papers. The aggregate utilities mirror this aversion (minimum u = -0.85), signaling to lenders that reducing collateral barriers—or substituting alternative security mechanisms—could expand their qualified borrower pool (Luan & Kingsbury, 2019).

Preferences regarding delinquency penalties are directionally similar across respondents but differ in intensity. All three farmers—and the aggregate model—prefer penalties assessed after the maturity date to those triggered after a shorter grace period, aligning with evidence that predictable, end-of-term sanctions support repayment planning (Kiros, 2020; D'Souza, 2020). Client 2's utilities (0.53 vs. 1.07) suggest the strongest aversion to early penalties, whereas Client 1's smaller differential (0.20 vs. 0.40) implies relative indifference. Such variation justifies a two-tier penalty scheme that rewards on-time completion without punishing temporary liquidity shocks.

Taken together, the results affirm that farmers in Digos City do not endorse a single, "representative" loan archetype; instead, they exhibit segment-specific trade-off patterns (Brewer et al., 2019). Common threads nonetheless emerge: a collective tilt toward annual repayment, minimal collateral, and post-maturity penalties, combined with moderate dispersion in tenor preferences. Designing loan menus that embed these shared priorities—while offering optional shorter terms for risk-averse growers—could enhance accessibility and repayment performance (Odhiambo & Upadhyaya, 2021). Ultimately, borrowers favor credit programs that are easy to qualify for, align with seasonal income, and impose transparent, manageable obligations, reinforcing the need for farmer-centered product engineering in Philippine rural finance (Kambali & Panakaje, 2022).

Table 4 summarizes the concordance between *observed* profile ratings and the *utilities-based* predictions generated by the conjoint model. The Pearson product–moment correlation was $r = .54$, $p = .003$, indicating a statistically significant, moderately positive linear association between raw ratings and estimated scores. In ordinal terms, Kendall's tau-b reached $\tau = .32$, $p = .012$, likewise demonstrating that the model correctly reproduces the rank ordering of most profiles (Siamuzyulu, 2019). In contrast, the hold-out tau was indistinguishable from zero ($\tau = .00$, $p = .50$), suggesting that the four validation profiles were not predicted better than chance. Although the primary fit indices support the model's internal consistency, the weak hold-out result cautions that predictive accuracy may attenuate for combinations well outside the calibration set (Li et al., 2020). Taken together, the statistics imply that the part-worth utilities provide a reliable approximation of farmers' stated preferences *within* the experimental design, yet additional calibration—or a larger orthogonal array—may be needed to bolster *external* predictive validity. As always, correlations reflect association, not causation; they simply gauge how faithfully the conjoint model mirrors the empirical ratings.

Table 4. *Correlations Between Observed and Estimated Preference Scores*

Index	r/τ	p
Pearson correlation	.536	.003
Kendall's tau-b	.321	.012
Kendall's tau-b (hold-out profiles)	.000	.500

Note. $N = 25$ calibration profiles; four additional profiles served as hold-outs.

Table 5 lists the 29 profile cards (Card IDs) produced by the SPSS orthogonal array, shows the constant and part-worth utilities for each attribute level (X_1 = terms & interest, X_2 = payment mode, X_3 = collateral, X_4 = delinquency timing), and reports the resulting total utility and rank. Total utility equals the model constant (1.934) plus the four corresponding part-worths.

Table 5

Utility Reconstruction and Rank Ordering of 29 Agricultural-Loan Profiles

Card ID	Constant	X_1 (Terms / Interest)	X_2 (Payment Mode)	X_3 (Collateral)	X_4 (Delinquency)	Total Utility	Rank
13	1.934	0.031	1.074	−0.170	0.753	3.622	1
11	1.934	0.015	0.537	−0.170	0.753	3.069	2
25	1.934	0.008	1.074	−0.340	0.376	3.052	3
26	1.934	0.008	0.805	−0.510	0.753	2.990	4
17	1.934	0.023	0.805	−0.170	0.376	2.968	5
28	1.934	0.023	1.074	−0.850	0.753	2.934	6
4	1.934	0.023	0.537	−0.340	0.753	2.907	7
24	1.934	0.008	1.074	−0.510	0.376	2.882	8
14	1.934	0.008	0.805	−0.680	0.753	2.820	9
16	1.934	0.031	0.805	−0.340	0.376	2.806	10
29	1.934	0.015	1.074	−0.680	0.376	2.719	11
2	1.934	0.008	0.268	−0.340	0.753	2.623	12
12	1.934	0.015	0.268	−0.510	0.753	2.460	13
1	1.934	0.008	0.268	−0.170	0.376	2.416	14
15	1.934	0.008	0.268	−0.170	0.376	2.416	15
18	1.934	0.031	0.537	−0.510	0.376	2.368	16
21	1.934	0.031	0.268	−0.680	0.753	2.306	17
9	1.934	0.015	0.805	−0.850	0.376	2.280	18
27	1.934	0.015	0.268	−0.340	0.376	2.253	19
7	1.934	0.008	0.537	−0.680	0.376	2.175	20
20	1.934	0.008	0.268	−0.850	0.753	2.113	21
19	1.934	0.023	0.268	−0.510	0.376	2.091	22
5	1.934	0.008	0.537	−0.850	0.376	2.005	23
6	1.934	0.023	0.268	−0.680	0.376	1.921	24
23	1.934	0.031	0.268	−0.850	0.376	1.759	25

Note. X_1 = Terms and interest-rate combination; X_2 = mode of payment (utility scale: monthly → annual); X_3 = collateral requirement (negative utilities increase with collateral stringency); X_4 = delinquency penalty timing (after grace period vs. after maturity). Constant = baseline utility from the conjoint model.

- Card 13 emerged as the clear front-runner (U = 3.622). It bundles a 10-year loan at 2% interest (X_1 = 0.031), *annual* repayment (X_2 = 1.074), a *co-maker-only* guarantee (X_3 = –

0.170), and a penalty assessed *after maturity* ($X_4 = 0.753$). The combination capitalizes on the two strongest positive utilities—annual repayment and lenient penalty—while avoiding highly negative collateral requirements.

- Card 23 occupies the opposite extreme ($U = 1.759$). Although the tenor and rate are identical to Card 13, utility is eroded by *monthly* repayment ($X_2 = 0.268$) together with the most stringent collateral bundle—land title *plus* vehicle papers ($X_3 = -0.850$)—and an early penalty trigger ($X_4 = 0.376$).

The 1.86-point spread between the top- and bottom-ranked cards illustrates how sensitive total appeal is to changes in repayment frequency and collateral policy—attributes that, in earlier analyses, proved most important to respondents.

The reconstruction confirms earlier importance weights: annual repayment and lenient collateral drive appeal upward, whereas stringent guarantees combined with high-frequency instalments suppress it. Lenders can improve product attractiveness by (a) synchronizing payment schedules with harvest cycles, (b) expanding acceptable collateral beyond land titles and vehicle papers, and (c) postponing delinquency penalties until final maturity. Implementing such borrower-centered features should enhance uptake, repayment discipline, and ultimately the developmental impact of agricultural credit (Stringer et al., 2020).

CONCLUSION

The study aimed to understand how small-holder farmers in Digos City, Davao del Sur, trade off important attributes of agricultural loan products. We used a full-profile conjoint approach to quantify part-worth utilities and create explicit attribute hierarchies for 290 respondents. Payment mode was the main factor, with annual and semi-annual schedules having the highest positive utilities, emphasizing the need to synchronize payback calendars with seasonal cash-flow cycles. While collateral requirements were a close second, utilities decreased significantly as guarantees migrated from co-makers to land titles and vehicle papers, indicating that strict collateral remains a major barrier to formal lending. Although loan duration and interest rate were less important, farmers still preferred longer maturities at lower rates, such as a ten-year loan at 2% annual interest, underlining the need of inexpensive, long-term finance for agricultural investment. Finally, borrowers viewed post-maturity delinquency fines as fair and predictable over shorter grace periods.

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Ethical Approval

No ethics approval was issued, but consent of authorities and informed consent for participants were followed and monitored by UMDC Research and Publication Center.

Competing interest

The authors declare no conflicts of interest.

Data Availability

Data will be made available by the corresponding author on request.

Declaration of Artificial Intelligence Use

In the preparation of this research, we utilized both **Quillbot Premium** and **ChatGPT (OpenAI o3)** as AI-assisted editing tools to refine language, ensure proper citation formatting in APA 7th edition style, and improve overall readability. The AIs were employed solely for proofreading, grammar correction, and structural suggestions; all academic content, analysis, and conclusions are our original work. We take full responsibility for the research's integrity and confirm that human judgment guided every critical decision throughout the study's development.

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