




## Research paper

# The effect of risk communication on financial decisions based on income level

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## ABSTRACT

**Introduction/Objective:** this study examines how risk communication (balanced vs. unbalanced information), product type (basic, mid-range, high-end), and consumer income level (low, middle, high) influence credit card use and installment payment decisions.

**Methodology:** a discrete choice experiment was designed with 90 participants (62 women, 28 men; mean age = 29.5 years) classified by per capita income into three levels (low, middle, high).

**Results:** the results show that balanced information increased the likelihood of choosing a credit card and reduced the number of installments selected. Conversely, middle- and high-income groups showed a greater preference for mid- and high-value products, intensified by unbalanced information, which led to longer payment terms. An ordinal logistic regression model confirmed that providing balanced information significantly reduces the number of installments, with a greater impact on low-income participants.

**Conclusions:** these findings underscore the role of balanced communication in mitigating financial risk and highlight the importance of risk literacy strategies that complement traditional financial education. This research contributes to the literature on consumer behaviour and behavioural economics by showing that the quality of information can shape more responsible credit decisions, with relevant implications for public policy design and the regulation of financial markets in contexts of economic vulnerability.

## El efecto de la comunicación del riesgo en las decisiones financieras según el nivel de ingresos

## RESUMEN

**Introducción/Objetivo:** el crecimiento del crédito de consumo ha incrementado la deuda de los hogares, especialmente en América Latina, donde el sobreendeudamiento es frecuente debido a limitaciones en la educación financiera. Este estudio examina cómo la

**Palabras clave:**

Decisiones financieras,  
comunicación del riesgo,  
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comportamiento del consumidor

comunicación del riesgo (información equilibrada versus desequilibrada), el tipo de producto (básico, medio, alto) y el nivel de ingresos del consumidor (bajo, medio, alto) influyen en el uso de tarjetas de crédito y en las decisiones de pago a cuotas.

**Metodología:** se diseñó un experimento de elección discreta con 90 participantes (62 mujeres, 28 hombres; edad media = 29.5 años) clasificados por ingreso per cápita en tres niveles (bajo, medio, alto).

**Resultados:** los resultados muestran que la información equilibrada incrementó la probabilidad de elegir la tarjeta de crédito y redujo el número de cuotas seleccionadas. El efecto fue más pronunciado en los consumidores de bajos ingresos, quienes, en ausencia de información equilibrada, tendieron a financiarse en un mayor número de cuotas. Por el contrario, los grupos de ingresos medios y altos manifestaron mayor preferencia por productos de valor medio y alto, intensificada por la información desequilibrada, que condujo a plazos de pago más extensos. Un modelo de regresión logística ordinal confirmó que la provisión de información equilibrada reduce de manera significativa el número de cuotas, con mayor impacto en los participantes de bajos ingresos.

**Conclusiones:** estos hallazgos subrayan el papel de la comunicación balanceada en la mitigación del riesgo financiero y evidencian la importancia de estrategias de alfabetización en riesgos que complementen la educación financiera tradicional. La investigación contribuye a la literatura sobre comportamiento del consumidor y economía del comportamiento al mostrar que la calidad de la información puede moldear decisiones crediticias más responsables, con implicaciones relevantes para el diseño de políticas públicas y la regulación de mercados financieros en contextos de vulnerabilidad económica.

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## Introduction

The global expansion of consumer credit, driven by growth in the financial sector and greater access to credit products, has increased household debt, reaching 41% of the world's gross domestic product (GDP) in 2023 (International Monetary Fund, 2023). Although debt-based financing supports inclusive and sustained economic growth in both developed and emerging economies (The World Bank, 2025), in regions such as Latin America this expansion has been linked to rising levels of over-indebtedness. Approximately 30% of households allocate more than 40% of their income on debt repayments, which limits their ability to save and increases their economic vulnerability (Economic Commission for Latin America and the Caribbean [ECLAC], (ECLAC, 2024). This pattern has also been associated with low levels of financial literacy; only a small proportion of people have the basic knowledge needed to make informed financial decisions, underscoring the need for programmes that go beyond traditional approaches to household budgeting (Lusardi, 2015; Goyal & Kumar, 2021; Kozol, 2026).

Economic inequality is another factor that determines access to and the effectiveness of financial literacy (Clark et al., 2025; Yadav et al., 2026). Research has found that young people with low levels of financial literacy who experience high financial stress are more likely to engage in risky credit behaviour (Liu & Zhang, 2021). This problem is more severe for vulnerable populations, who often have limited financial knowledge and scarce economic resources (Fu et al., 2025; Velandia-Morales et al., 2022).

This phenomenon is particularly evident in Latin America. According to Verma and Chatterjee (2025), while financial inclusion has facilitated access to formal financial systems, it has not resulted in a greater use of financial services. Concurrently, income inequality and over-indebtedness among low-income households continue to rise (Kozol, 2026). Thus substantiating the assertion made by Garcia-Retamero et al. (2019) that financial literacy programmes are designed to benefit this demographic, yet they benefit the least from them.

However, extant evidence suggests that conventional financial education programmes may be less effective and increase systemic inequalities that financially exclude low-income individuals, people with limited education, rural populations, and other disadvantaged groups (Birkenmaier et al., 2025; Garcia-Retamero et al., 2019). The underlying causes of these limitations remain to be elucidated, potential explanations include deficiencies in public policies or programme design (Birkenmaier et al., 2025; Clark et al., 2025). However, another possibility is that these limitations reflect fundamental differences in the way risk information is processed across income groups. These barriers to risk management have been shown to increase the likelihood that vulnerable populations will make suboptimal financial decisions (Kondratjeva et al., 2021; Liu & Zhang, 2021). To clarify the concept's scope, this study employs the term "financial risk management" to denote specifically credit risk, defined as the possibility that consumers may be incapable of fulfilling the debt obligations they incur through credit cards (Yu et al., 2025). Operationally, credit risk is defined as the probability that a borrower will fail to meet contrac-

tual obligations, either because of information asymmetries between parties or because economic conditions change in ways that affect repayment capacity (Montevechi et al., 2024; Xiaohui, 2025). Consequently, this framework does not address other dimensions of financial risk, such as market risk, liquidity risk, or investment risk.

A comprehensive understanding of over-indebtedness necessitates the integration of financial and psychological perspectives. Research on financial behaviour has examined how financial literacy shapes people's ability to grasp economic concepts and their attitudes towards risk management, identifying cultural, demographic, social, and psychological determinants (Davoli & Rodríguez-Planas, 2020; Shah et al., 2024). Culturally, individuals from contexts that emphasise patience, long-term orientation, and risk aversion tend to demonstrate higher financial literacy, which supports more informed and effective decision-making (Davoli & Rodríguez-Planas, 2020). In contrast, Shah et al. (2024) contend that demographic and social factors including gender, education, and income, influence individuals' ability to take financial risks prudently, thereby amplifying the probability of indebtedness.

On the other hand, de Bruijn and Antonides (2022) contend poverty involves the use of cognitive resources when receiving information about risks. People with financial security and high incomes tend to employ executive control and do not experience an immediate need for gratification. In contrast, vulnerable populations, faced with the same information reaching an overloaded system, may develop risk aversion. This aversion, combined with urgency, can lead to decisions such as obtaining high-risk informal loans, among other over-indebtedness scenarios. Despite efforts to simplify risk communication, questions remain about whether reducing cognitive load through simplified, verified, and transparent information improves the quality of financial decisions. This issue becomes particularly relevant when considering different income levels.

Advances in decision science highlight the need to strengthen people's ability to make and reflect on informed choices (Cokely et al., 2018). To achieve this goal, financial literacy programmes should incorporate complementary psychological approaches, such as risk literacy, to support better decision-making. This integration is especially relevant for populations with limited numeracy skills (Perrin et al., 2025) or low income (García-Retamero et al., 2019).

Along these lines, behavioural interventions should be designed to create contexts that encourage informed decision-making. These interventions should offer complete, clear, and accurate information that is also easy to read and understand (Ortiz et al., 2024). A key principle is the simplifying cognitively demanding tasks to help consumers identify essential information more quickly (He et al., 2022). Similarly, in financial settings, individuals are better able to recognise key information in their credit card statements when it is presented in an organised and intuitive format (Ortiz et al., 2024).

Thus, simplified and accessible information presented at the right moment can meaningfully influence consumer behaviour (Ortiz et al., 2024). Jiang et al. (2025) argue that

inattention contributes to widespread minimum and late payments; fostering greater attention encourages early repayment and reduces delinquency, indicating that early payment is not a random choice. In addition, Burlinson et al. (2018), note that interest rates may reflect market conditions, suggesting that people can benefit when public policies acknowledge that information and psychological processes shape financial decisions—particularly in light of individuals' socioeconomic backgrounds.

Research indicates that people frequently employ probabilistic or heuristic reasoning methods rather than strictly logical processes. Consequently, financial decision-making is associated with bounded rationality, in which individuals do not always optimise but instead look for satisfactory solutions given limits in time, cognition, and information (Hjeij & Vilks, 2023). In contrast, under conditions of adaptive rationality, people prioritise relevant information and engage in reflective processes. Autonomous effort plays an important role, as do support tools—such as guidance or counselling—that help identify alternatives considered most suitable for a given decision problem (Methling et al., 2022). However, in high-pressure situations or when time is limited, people frequently make decisions without extensive deliberation, relying on fast and frugal heuristics rather than more complex strategies. These heuristics can be efficient, but they may also be risky when they do not fit the structure of the environment (Lejarraga & Hertwig, 2021).

These heuristics differ from traditional optimisation because they aim to satisfy rather than maximise, intentionally ignoring some information in order to enable quick, accurate decisions (Kozyreva & Hertwig, 2021). Their effectiveness, however, depends on how well they match the environment. In unstable settings or in situations with limited or absent information, they may lead to outcomes that do not favour individuals (Arkes et al., 2016). For this reason, designing tools and contexts that strengthen decision-making—promoting ecological rationality and risk literacy—is essential (García-Retamero et al., 2019).

Studies such as García-Retamaro et al. (2019) and Cokely et al. (2018) emphasise the need to strengthen risk literacy and to develop policies that support interventions or programmes useful for vulnerable populations, low-income groups, and society at large. García-Retamaro et al. (2019) note that individuals with low numeracy and limited financial education often make disadvantageous choices, such as selecting high-cost loans or failing to plan adequately for the future. However, few studies have examined how providing integrated, transparent, and corrected financial information, including both the negative consequences of certain choices and simplified financial calculations—can improve consumer decision-making.

This approach is particularly relevant for individuals with limited formal education, low income, or no solid financial training. Therefore, this study uses the criteria set forth in Wegwarth et al. (2014) evaluate balanced information. Information is considered balanced when: (a) It is considered to have got *completeness* when the benefits, harms, and side effects (in health-related cases) are communicated. (b) It is considered to be *transparent* when the benefits and

harms are presented as absolute rather than relative risk figures, and when a reference class is provided. (c) Information is considered *accurate* when it is evidence-based.

Building on this context, the objective of the present study was to analyse how different types of information influence the potential use of credit cards. Using a discrete choice task, the study examined whether the risk communication level—through complete (balanced) or incomplete (unbalanced) information—along with product type and consumer income level, affects credit card use and the number of installments selected for repayment. The aim was to assess the role of information presentation in promoting responsible financial behaviour. More specifically, when consumers compare a product from one category with information regarding a product from another category without information, they may be able to make a more informed choice, ultimately improving their financial situation. Two hypotheses were proposed:

**H1.** The type of risk communication and the type of product significantly influence the decision to use a credit card.

**H2.** The type of risk communication and the type of product significantly influence the number of installments selected for a purchase.

In addition, this study proposes that the effect of the risk communication level on both credit card use and installment choice varies according to three consumers' income levels, measured according to per capita income (monthly household income divided by the number of household members). Lower-income consumers may be more sensitive to how information is presented and may tend to choose a higher number of installments as a strategy to reduce their monthly financial burden. In contrast, higher-income consumers may be less influenced by this information, as their repayment capacity allows them to prioritise product type or total cost, leading them to prefer fewer installments. Accordingly, the following hypotheses were proposed:

**H3.** There is a significant interaction between the income level and the risk communication level in the decision to use a credit card.

**H4.** Preferences regarding the number of installments selected vary significantly by income level.

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## Method

### Participants

The final sample consisted of ninety individuals with credit card history (62 women and 28 men), with an average age of 29.5 years ( $SD = 5.2$ ), divided into three groups ( $n = 30$  per group), representing a balance between the feasibility of the study and recruitment capacity due to sample access limitations. To achieve this sample size, 230 potentially eligible individuals were voluntarily evaluated. Participants

were selected according to the income level inclusion criteria until the required number in each group was reached.

Of the final sample, regarding educational attainment, 34.4% had technical training, 12.2% had technological training, 22.2% held a professional degree, and 31.1% held a graduate degree. The sample size was determined through a priori power analysis using G\*Power 3.1.9.4 (Faul et al., 2007), assuming a repeated-measures MANOVA design (within-interaction). An F test was used with a moderate effect size ( $f = 0.30$ ; Cohen, 1988), a significance level of  $\alpha = .05$ , statistical power of 0.95, three groups, and six repeated measurements. Cohen (1988) indicates that with  $n = 30$  per group, there is acceptable power to detect large effects ( $d = 0.8$ ), which is common in controlled psychological interventions. Both the amount of household income and the number of household members were reported by participants, and this data was used to categorise them with strict criteria according to the official classification of the National Administrative Department of Statistics (DANE, 2023), considering per capita income (monthly household income divided by the number of household members). Participants were classified as follows: (a) low income, between COP \$400,000 and \$750,000 COP (around 100 to 185 USD); (b) middle income, between COP \$750,001 and \$3,999,999 COP (185.1 to 999 USD); and (c) high income, from COP \$4,000,000 onwards COP (1000 USD).

### Design

A mixed within- and between-subjects experimental design with repeated measures was conducted (Privitera, 2020), using a discrete choice task (Melo Guerrero et al., 2020). The groups were defined based on the objective criterion of per capita income. Although the groups differed in age, gender, and educational level, all participants performed the same task under the same conditions, with the only systematic variations being risk communication and product type. In this task, participants were shown six different cards in paired comparisons. For each pair, they were asked to choose one of the two cards and indicate the number of credit card installments they would select to pay for the product shown on the chosen card and a stated preference question as an attitudinal rating after the choice of preference for installment payments (scale of 1 to 7).

The independent variables were risk communication, with two levels of information—balanced and unbalanced (B1 and B2)—and product type, with three levels: basic, intermediate, and high (P1, P2, P3). Each card contained images and text illustrating one type of information and one type of product, resulting in six cards or profiles.

The cards were presented in random order to each participant, yielding six comparisons. In this study, decision quality was assessed through the ecological selection of alternatives that adapt to estimate a financing cost, given the objective conditions of the product (balanced information). In this context, each choice scenario presented two alternatives in the same space: one with a specific type of product and balanced information versus another with a different type of product and unbalanced information (Table 1).

The dependent variables were the likelihood of using a credit card (measured on a 1-7 scale) and the number of installments chosen (open numeric response).

**Table 1. Orthogonal combinations of risk communication and product type in the discrete choice task**

Product Type	Risk Comunicación	
	Balanced (B1)	Unbalanced (B2)
Basic (P1)	P1 B1	P1 B2
Intermediate (P2)	P2 B1	P2 B2
High (P3)	P3 B1	P3 B2

Source: Author's own elaboration.

### Instruments

A personal data questionnaire was administered to each participant to collect information on age, sex, and educational level (ranging from technical training to graduate studies). To classify participants by income level, the questionnaire included the following indicators: the number of household members, the number of income earners in the household, and the approximate total household income. In addition, participants were asked about their credit history, including the number of years they had used a credit card and the number of active credit cards they held at the time of participation.

Risk communication of information (Wegwarth et al., 2014) was operationalised at two levels. Balanced information (B1) incorporated three features: (a) completeness, by presenting the payment amount for the chosen product according to the three most common installment options; (b) transparency, by providing information on annual interest, corresponding monthly interest, and a symbolic handling fee derived from standard bank offers; and (c) correction, by summing the total interest payment across installment alternatives plus the product price. In contrast, unbalanced information (B2) simulated the typical consumer experience when purchasing with a credit card, presenting only the statement: “depends on the number of installments chosen by the buyer.”

The product-type variable included three levels. The first was a basic good involving routine purchase (groceries or a backpack, P1). The second was a luxury good involving a discretionary purchase of a mid-range technology product perceived as relatively affordable (a smart TV or a mid-range smartphone, P2). The third was a hedonic product, involving the evaluation of a high-technology item with a high price point for the average consumer (a washer-dryer tower or a gaming laptop, P3). Each product was assigned a price adjusted to real market values based on a review of multiple digital retail platforms (for an example view Appendix 1).

### Procedure

The experiment followed five steps and lasted an average of 15 minutes. Data were collected through a Google Forms survey with the following sequence: (a) providing informed consent; (b) completing demographic questions; (c) reviewing a practice trial that presented an example of

the discrete choice task; and (d) completing the experimental choice task, where each participant evaluated six pairs of credit-card options and indicated both their preferred option and the number of installments they would use for payment.

### Ethical considerations

Participants received assurances of anonymity through the informed consent form, which described the study's purpose, procedures, voluntary participation, and confidentiality. The study did not offer monetary compensation.

## Results

The data analysis was conducted in RStudio (version 4.4.3; Posit team, 2025). Sociodemographic characteristics of the sample appear in Table 2. The 90 participants were assigned to income groups (low, middle, and high) based on their per-capita income, with 30 participants in each group. Women represented a larger share of the sample, particularly within the low-income group. Higher educational attainment corresponded to a greater proportion of participants in the high-income group. Regarding payment patterns, full-balance payers were more prevalent in the middle- and high-income groups.

**Table 2. Demographic characteristics of the sample in percentage of columns by income level**

Variable	Income Level						Total %
	Low %	Medium %	High %				
<b>Gender</b>							
Female	29 (97)	16 (53)	19 (63)			64 (71)	
Male	1 (3)	14 (47)	11 (37)			26 (29)	
<b>Educational Level</b>							
Technical	19 (63)	11 (37)	1 (3)			31 (34)	
Technologist	9 (30)	1 (3)	0 (0)			10 (11)	
Professional	1 (3)	8 (27)	12 (40)			21 (23)	
Postgraduate	1 (3)	10 (33)	17 (57)			28 (31)	

Source: Author's own elaboration.

The effect size was estimated using partial eta squared ( $\eta^2$  partial), adapted for a generalised logistic model with fixed effects. The model included risk communication level, product type, and income level as predictors, along with their interactions, and incorporated a random intercept per participant. The analyses indicated small effects for risk communication level ( $\eta^2$  partial = .05, 95% CI [0.03, 1.00]) and product type ( $\eta^2$  partial = .03, 95% CI [0.01, 1.00]), and a medium effect for the interaction between income level and product type ( $\eta^2$  partial = .09, 95% CI [0.06, 1.00]) (Cohen, 1988). In addition, the pseudo coefficient of determination was estimated using the Nagelkerke index, which showed that the model explained approximately 21.3% of the variance in the probability of choice (Nagelkerke  $R^2$  = .213), representing a moderate effect size. Complementary Cox and

Snell  $R^2$  (.160) and McFadden  $R^2$  (.126) values were also obtained, further supporting the adequacy of the model.

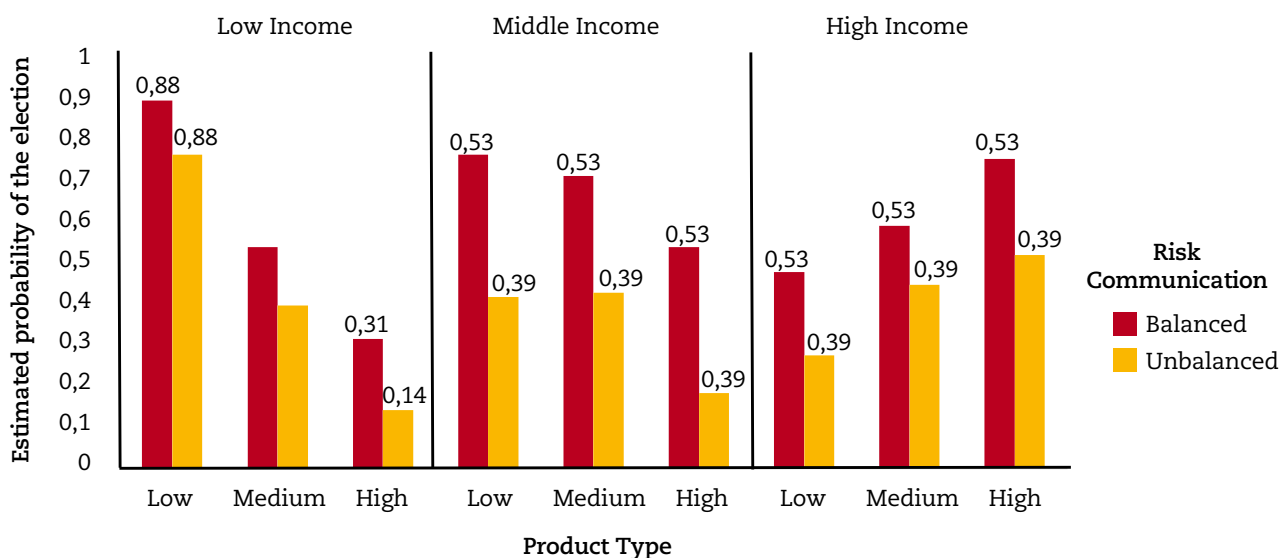
In the first phase, two generalised logistic models with random effects per participant were estimated to model the probability that an alternative would be chosen, considering risk communication level, product type, and income level: (1) the mixed logistic model with random effects per participant presented a singular fit (variance  $\approx 0$ ), suggesting that fixed effects captured most of the variability; and (2) the standard logistic model with full interactions (Information  $\times$  Product, Information  $\times$  Income Level, and Product  $\times$  Income Level) was selected based on a lower AIC (1337.5 vs. 1432.7) and deviance (1309.5 vs. 1418.7).

H1, concerning the significant influence of risk communication level and product type on the decision to use a credit card, and H3, concerning the significant interaction between income level and risk communication level on the decision to use a credit card, were supported. The main effects analysis showed that product type was a key determinant in choice (H1): both the medium ( $\beta = -1.88, p < .001$ ) and high ( $\beta = -2.79, p < .001$ ) products reduced the probability of choice compared to the low product, while unbalanced information also reduced the probability of choice ( $\beta = -0.87, p = .009$ ). Moreover, lower preference for the low product with balanced information was observed among participants in the medium-income group ( $\beta = -0.87, p = .020$ ) and the high-income group ( $\beta = -2.13, p < .001$ ). Regarding key interactions, a higher preference for the medium- and high products was found in the medium- ( $\beta = 2.33, p < .001$ ) and high-income ( $\beta = 3.98, p < .001$ ) groups. In contrast, the interactions with risk communication level were not significant. Finally, consistent with H1 and H3, the marginal effects analysis revealed that the low-income group had a higher probability of choosing the low product (88% with balanced information vs. 75% with unbalanced information), whereas

in the high-income group, the probability of choosing the high product increased (74% with balanced information vs. 51% with unbalanced information), supporting the significant interaction between risk communication, product, and income level (see Figure 1).

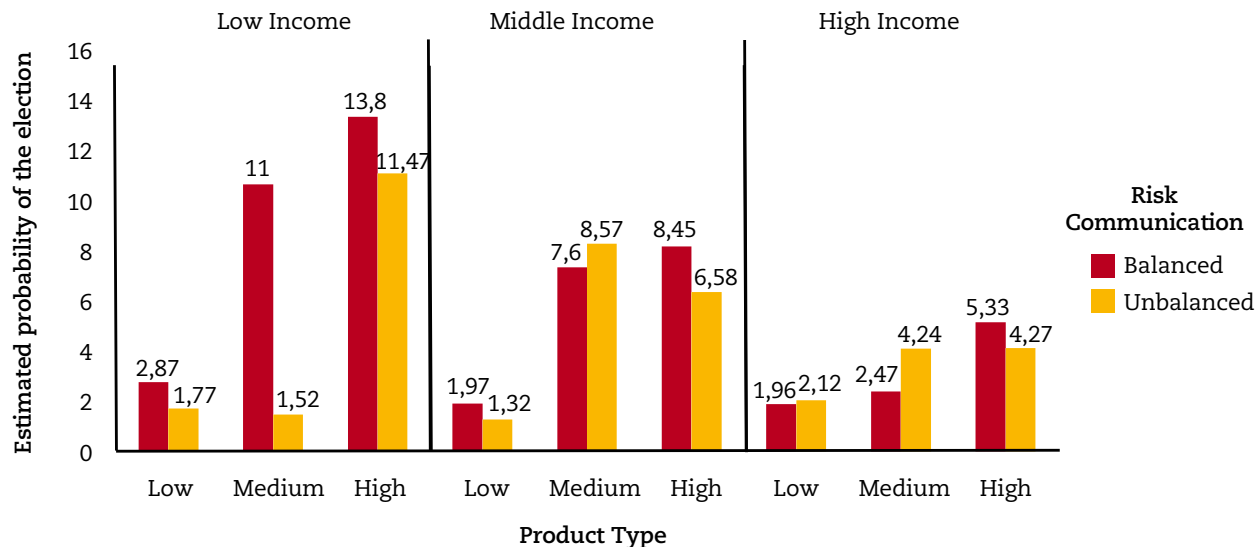
In the second phase of analysis, mixed linear models were used to test whether the number of installments selected moderate the effects of risk communication level, product type, income level, and their respective interactions, including a random effect for participants. The mixed model with interactions provided a better fit (AIC = 2998.11), significantly reducing the AIC compared to the simple linear model without interactions (AIC = 3239.07) and the linear model with interactions (AIC = 3084.28). The mixed model with interactions revealed significant individual heterogeneity in installment choice (variance of the intercept for participants = 11.00, 95% CI [5.72, 16.28]), capturing 45.1% of the total variance (marginal  $R^2 = .28$  for fixed effects; conditional  $R^2 = .45$  for the full model). Assumptions of homoscedasticity and independence were verified, and no violations were observed (Levene's test,  $p = .18$ ; Durbin-Watson test,  $p = .34$ ).

Hypothesis H2, regarding the significant influence of risk communication level and product type on the number of installments selected, and Hypothesis H4, regarding the significant variation in installment preferences according to income level, were both supported. Regarding main effects, product type was a key determinant in the decision, with the number of installments significantly higher for the medium product ( $\beta = 8.13, t(442.63) = 8.13, p < .001$ ) and high product ( $\beta = 10.93, t(482.74) = 10.93, p < .001$ ), compared to the low product (see Figure 2). For interactions, balanced information reduced the number of installments selected (H2), whereas for the medium product, unbalanced information significantly increased the number of installments



**Figure 1. Estimated probability of choice by combination using the logistic model with complete interactions**

Source: Author's own elaboration based on analysis performed in R (version 4.3.3).



**Figure 2. Estimated number of installments per combination, according to the mixed model with interactions**

Source: Author's own elaboration based on analysis performed in R (version 4.3.3).

( $\beta = 1.62, p = .021$ ). Regarding income levels (H4), compared to the low-income group, the number of installments decreased for the medium-income group in both the medium product ( $\beta = -2.50, p = .002$ ) and high product ( $\beta = -4.45, p < .001$ ), and even more strongly for the high-income group in the medium product ( $\beta = -7.63, p < .001$ ) and high product ( $\beta = -7.55, p < .001$ ).

Finally, an ordinal logistic regression model was estimated to examine the effect of risk communication level, product type, and income level on the number of installment categories selected (1–3, 4–6, 7–9,  $\geq 10$  installments), including all two-way interactions. The model showed a satisfactory fit (AIC = 864.55) and met the proportional odds assumption (Brant test,  $p > .12$ ; Hosmer–Lemeshow,  $p > .05$ ). Results confirmed that balanced information significantly reduced the number of installments chosen, with this effect being more pronounced at the low-income level.

With respect to the main effects, product type strongly increased the likelihood of selecting a higher number of installments (OR > 100), both for medium vs. low product (OR = 132.91,  $\beta = 4.89, p < .001$ ) and high vs. low product (OR = 116.82,  $\beta = 4.76, p < .001$ ). Conversely, the absence of balanced information was associated with a higher preference for more installments (OR = 0.20,  $\beta = -1.61, p = .029$ ), except in the case of high vs. low-income level (OR = 0.05,  $\beta = -3.00, p < .001$ ), in line with H4. Regarding significant interactions, unbalanced information increased the number of installments among high-income participants (OR = 3.16,  $\beta = 1.15, p = .037$ ). However, for this same group, the high product had a negative effect ( $\beta = -3.50, p < .001$ ), while for the medium-income group, the medium product also showed a negative effect ( $\beta = -2.68, p < .001$ ). These results indicate that participants in the middle- and high-income groups tended to avoid choosing a larger number of installments, particularly under specific product conditions.

## Discussion

The findings indicate that balanced information fosters a comprehensive understanding of the risk associated with consumers' payment decisions, for the overall model explains 21.3% of the variance (Nagelkerke  $R^2 = .213$ ). Despite the sample size ( $N = 90$ ), the results demonstrate remarkable statistical robustness. Although the sample size could limit generalisation to a diverse population, the consistency of the effects found justifies the relevance of the model in explaining the phenomenon in the context studied. This risk communication level that increases the likelihood of choosing to pay with a credit card and decreases the number of installments selected, regardless of product type or income level, showed in a moderate effect size ( $\beta^2$  partial = .09). Although participants preferred lower-category products in the choice task, they viewed higher-category products as more feasible, especially in the interaction between income level and number of installments.

The main contribution of this study is that balanced information reduces the number of installments chosen and increases product choice across all income levels, supporting H2. Among low-income participants, balanced information significantly reduced the preference for selecting a high number of installments, whereas its absence increased this tendency for medium- and high-category products. Cirkanka et al. (2026) and Rooney and Loibl (2026) found that socioeconomic disparities in an environment characterised by a scarcity mindset and competition influence decisions and perceptions regarding rewards. Furthermore, they assert that these disparities affect decision-making under conditions of risk investments, as demonstrated in this study when the product type was presented without balanced information.

Although not formally evaluated, the installments chosen were consistent with income levels, this can be interpreted as a heuristic deliberation aimed at reducing the

cognitive load associated with the decision-making. This pattern suggests that balanced information plays a central role in reducing the “noise” in the decision-making process and promoting more prudent choices that mitigate debt risk, particularly with those in the low-income level. This is why public policies need to be normative and prescriptive, as proposed by Thekdi and Aven (2026), in order to establish a uniform framework for the evaluation of risk-related discourse, it is necessary to develop a comprehensive framework for the automated evaluation of discussions concerning risk in various domains such as investment, human rights, vulnerabilities related to different types of disasters, and other pertinent areas.

In contrast, participants in the middle- and high-income groups showed stronger preferences for medium- and high-category products, respectively, supporting H1; when balanced information was absent, they also chose a higher number of installments. In other words, for consumers to make qualified decisions (Cokely et al., 2018) when using a credit card, balanced information must be provided to support an efficient and deliberate search process (Ashby, 2017). Such information should be simplified, easy to read, and easy to understand (Ortiz et al., 2024), either through visual formats (Garcia-Retamero & Cokely, 2017) simple rules (Banerjee et al., 2025) or behaviourally informed financial education (Pitthan & De Witte, 2025).

In fact, the interaction between income level and product type reveals how risk communication is perceived. For each income level, product type demonstrates that it is a financial tool and a decision-making mechanism. For lower-income individuals, their choice may be driven by immediate liquidity needs rather than a lack of financial knowledge. Another key finding of this study is that while the low-income group reduced its preference for medium- and high-category products, the high-income group maintained a stable preference for high-category products and increased the number of installments when the choice was presented with unbalanced information. This pattern supports all four hypotheses of the study. For the low-income group, these results align with Burlinson et al. (2018) who found that consumers often reject the more expensive and efficient alternative because of the cost of acquiring information, opting instead for the cheaper option. In contrast, for the middle- and high-income groups, the findings are consistent with Wei et al. (2024), who argue that high product involvement increases purchase intention under positive emotions, making information processing more difficult and leading consumers to rely on simpler and more arbitrary decision strategies compared to negative emotions in utilitarian product choices.

Although balanced information reduced the number of installments among low-income participants, this group still showed a general tendency to choose a higher number of installments, supporting H4. This behaviour may reflect a stronger reliance on installment financing, which could be linked to liquidity constraints (Madeira, 2024), reduced need for immediate accessibility (Calcott & Petkov, 2024) or limited knowledge of the hidden costs associated with credit card use (Arsyianti & Kassim, 2021). These results highlight

the vulnerability of low-income groups and align with Shah et al., (2024) who noted that individuals with low incomes face greater challenges in managing financial risks prudently, which may increase the likelihood of indebtedness.

These findings reinforce the importance of mitigating the information asymmetries between financial institutions and users (Ortiz et al., 2024). In circumstances where payment options are characterised by a paucity of transparency—for instance, when the long-term cost of installment plans is not readily apparent—consumers, irrespective of their income level, have been observed to engage in spending patterns that are financially detrimental or unsustainable (Ashby, 2024). This highlights the significance of findings related to balanced information in extracting the essential meaning (gist) and activating meaningful intuition of financial risk for decision-making (Reyna et al., 2025).

This study offers useful alternatives for policymakers, especially in emerging economies, to promote complete, transparent, and corrected information in credit card use. Such measures can help prevent economically vulnerable consumers from worsening their financial situations, since credit cards may temporarily alleviate a crisis but their indiscriminate use can produce long-term negative effects (Abrantes-Braga & Veludo-de-Oliveira, 2020; Cokely et al., 2018; Madeira, 2024). These programmes should extend beyond traditional financial education and incorporate complementary psychological approaches, including risk literacy (Garcia-Retamero et al., 2019), training in active bias mitigation (Pitthan & De Witte, 2025), low-cost and scalable narrative-based interventions (Clark et al., 2025) short and low-cost narratives with broader reach (Clark et al., 2025), and interventions that combine information with financial incentives to encourage debt repayment and benefit consumers (Hendy et al., 2021).

The findings of this study highlight the value of behavioural economics for understanding economic and social phenomena within the framework of social design. They show that the financial system itself can generate vulnerabilities that threaten not only consumers' quality of life but also the stability of financial institutions, given the sustainability challenges of household debt—particularly in developing countries, where debt per capita continues to rise. When markets are balanced, risk-management awareness is strengthened, financial knowledge is reinforced, and self-control in impulsive consumption is promoted, credit card use can have a positive impact on households with low educational attainment in conditions of economic vulnerability (Chen et al., 2023; Van Raaij et al., 2023; Yu et al., 2025) and on society at large.

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## Limitations and future research

The study presents several limitations that create opportunities for future research. First, although the effects were identified through a controlled experiment, results may vary with finite samples or in different cultural contexts. Second, while the statistical assumptions of the models were verified (e.g., normality, homoscedasticity of residuals, and absence of multicollinearity), it would be advisable to replicate

the analyses using additional robust methods. Third, future replications should rely on larger and more diverse samples—ideally through probabilistic or stratified designs—to improve the representativeness and cross-cultural applicability of the findings. Fourth, because the study used a hypothetical scenario, the results should be validated with real purchase data to strengthen ecological validity. Finally, given the cross-sectional design, future studies could employ longitudinal approaches to examine the long-term impact of risk literacy on financial decision-making.

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## Conflict of interest

The authors declare that they have no conflict of interest related to the publication of this article.

## Authors' contribution

Cristian Oswaldo Beltrán-Oicatá: Conceptualisation, Investigation, Methodology, Data curation, Writing – original draft, Writing – review & editing; Marithza Sandoval-Escobar: Conceptualisation, Methodology, Supervision, Validation, Writing – review & editing; Ricardo Macías Bohórquez: Data curation, Formal analysis.

## Ethical statement

This study was conducted in accordance with the bioethical standards of the University. Ethical approval was granted by the Curriculum and Bioethics Committee (Act No. 30, 25 July 2023). All participants provided informed consent prior to their participation.

## Data availability statement (DAS)

<https://figshare.com/s/bb4fbb15ea534c2599ba>

## Author use of language models

The authors used an AI-based language model (ChatGPT, OpenAI) exclusively to support the English translation and linguistic editing of the manuscript. All conceptualisation, methodological design, data analysis, interpretation of results, and theoretical development were conducted entirely by the authors. The authors reviewed, verified, and edited all AI-assisted outputs to ensure accuracy and fidelity to the original content. No generative tools were used to produce, analyse, or interpret research data. The authors retain full responsibility for the content of the article.

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