Master M2 BDEEM

Behavioral and Digital Economics for Effective Management

ARCLAY

Strategic Neuromarketing & Behavioral Economics Report

Consulting Project

ARCLAY — The Smartest Way.

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Introduction

Inflation and volatile prices have made everyday purchases increasingly stressful. Traditional banking applications offer retrospective spending summaries but rarely address the emotional, cognitive and automatic processes that drive real-life financial decisions. Research in behavioural economics and consumer neuroscience shows that mechanisms such as the pain of paying, loss aversion, mental accounting, reward anticipation and cognitive fatigue play a central role in everyday choices.

ARCLAY adopts a different approach by combining tiered banking cards, multi-sector cashback, AI-powered OCR receipt analysis, intelligent price comparison and personalised notifications that adapt to user habits. Its slogan — *"ARCLAY — The Smartest Way."* — expresses a value proposition built on clarity, efficiency and intelligent financial guidance.

Beyond providing functional tools, ARCLAY seeks to reduce cognitive load, increase perceived control and foster habit formation through reinforcement mechanisms, simple decision architectures and emotionally rewarding interactions. The platform also integrates neuroscientific principles related to vmPFC value integration, dlPFC cognitive effort regulation and dopaminergic reinforcement dynamics. Finally, neuromarketing validation methods (EEG, A/B testing, behavioural KPIs) support evidence-based design.

Research question:

> How can ARCLAY leverage neuromarketing and behavioural economics to reduce the cognitive and emotional burden of financial decisions while strengthening perceived value, habit formation and long-term loyalty?

The report develops five phases: understanding user profiles and emotional journeys; building a trustworthy brand experience; shaping economic incentives through behavioural mechanisms; reinforcing behavioural patterns through habit-formation dynamics; and validating the design with neuromarketing tools.

1 Understanding ARCLAY Users

Understanding ARCLAY's audience requires integrating behavioural segmentation, emotional drivers and neuroscientific mechanisms. Two personas capture the platform's core user profiles and guide all strategic design decisions.

1.1 Persona 1 — The Optimizing Consumer

This persona is a working adult aged 25–45 who manages money responsibly but increasingly feels overwhelmed by fluctuating prices and uncertainty about where products are cheapest.

Functional expectations: They want clear price comparisons, visible weekly and monthly savings, and a simple, low-effort dashboard.

Emotional expectations: They seek reassurance, clarity and a renewed sense of control over their spending.

Pain points: They frequently feel that they are "overspending without noticing" and are frustrated by the difficulty of identifying the cheapest store.

Neuroscientific profile: This persona exhibits strong activation of the *insula*, which amplifies the pain of paying when a purchase feels suboptimal. The *ventromedial prefrontal cortex* (vmPFC) integrates emotional and rational information to judge whether a financial decision "feels right". Constant manual price comparison taxes the *dorsolateral prefrontal cortex* (dlPFC), leading to cognitive fatigue. ARCLAY reduces this burden through automation and personalised guidance, enabling better decisions with minimal mental effort.

1.2 Persona 2 — The Budget-Conscious Student

A student aged 18–25 living on a tight budget and highly sensitive to small, immediate financial gains.

Functional expectations: Fast price comparisons, access to relevant promotions and dependable cashback.

Emotional expectations: Feeling rewarded and capable of managing a limited budget intelligently.

Pain points: The perception that every euro matters, frustration when discovering cheaper alternatives too late, and difficulty optimising purchases across stores.

Neuroscientific profile: The dopaminergic reward system plays a central role: small gains (cashback, streak bonuses, progress bars) stimulate reward anticipation and enhance memory encoding. The vmPFC evaluates these micro-rewards, making visible progress a key motivational driver. ARCLAY leverages this responsiveness with gamified feedback and personalised suggestions that reinforce engagement.

1.3 Emotional Journey and Behavioural Stages

ARCLAY's user journey follows five emotional and cognitive stages, each associated with specific opportunities for behavioural guidance.

Stage 1 — Awareness: Users feel anxious due to low visibility over their spending. Prices seem unpredictable, and cognitive load is high. ARCLAY reduces tension through simple, transparent messages and calming colours that convey reassurance from the first interaction.

Stage 2 — Consideration: Curiosity develops as users seek tools to regain control. Loss-aversion framing (e.g., "You could save €20–€30 monthly") highlights the cost of inaction. The low price of the Starter card provides a safe reference point, making ARCLAY appear accessible and low-risk.

Stage 3 — Onboarding: The first receipt scan or ARCLAY payment triggers a dopamine response (e.g., "You saved €1.42"). This moment forms an early emotional imprint encoded by the vmPFC, establishing ARCLAY as a source of "smart decisions".

Stage 4 — Habit Formation: Emotions shift to relief and confidence. The AI detects user patterns and provides contextual recommendations (e.g., "Your yogurt is cheaper at Lidl"). Weekly summaries reinforce perceived progress. Behaviourally, the goal-gradient effect and streak mechanisms strengthen routine formation by increasing motivation as users approach their targets.

Stage 5 — Loyalty: With cumulative savings, users feel empowered. Tier progression and positive weekly recaps leverage the peak-end rule, shaping a strong, favourable memory of ARCLAY and encouraging advocacy.

2 Strengthening Brand Perception

Brand perception shapes emotions before users even interact with concrete features. For ARCLAY, visual identity, slogan design and interface architecture work together to create trust, clarity and cognitive ease. This section explains how the brand activates positive emotional and neural responses that support adoption and long-term engagement.

2.1 Slogan and Positioning

ARCLAY's slogan — *"ARCLAY — The Smartest Way."* — encapsulates intelligence, simplicity and daily usefulness. Its rhythm, brevity and symmetry make it highly fluency-friendly: users can process it instantly, which strengthens vmPFC-based value judgments and memory encoding. A fluent slogan unconsciously signals that the product itself will be simple to use, increasing trust and lowering resistance to adoption.

2.2 Visual Identity and Colour Strategy

Colours strongly influence emotional reactions and perceived value. ARCLAY's palette creates a coherent hierarchy aligned with behavioural expectations:

- **Starter — Mint Green:** evokes calmness and accessibility, reducing early anxiety for new users. Green tones are associated with balance and financial well-being, lowering insula activation linked to the pain of paying.
- **Smart — Sapphire Blue:** universally associated with trust, rationality and competence. Blue reduces amygdala activation, helping users feel that this tier is the safest and most intelligent choice.
- **Elite — Gold & Black:** gold stimulates reward-anticipation circuits in the ventral striatum, while black conveys authority and exclusivity. Together, they reinforce the premium positioning of the Elite card.

This visual hierarchy allows users to intuitively understand the structure of ARCLAY's tiers even before reading detailed descriptions.

2.3 Interface Design and Cognitive Ease

ARCLAY's interface is intentionally minimalistic to reduce cognitive load and support the dlPFC in decision-making. Clean typography, predictable navigation and limited visual clutter foster cognitive fluency, meaning users require less mental effort to complete task sequences. Key actions such as "Scan receipt", "View savings", or "See best price" are visually highlighted to direct attention efficiently. Micro-interactions — soft vibrations, smooth cashback animations, progress badges — act as micro-rewards. These small dopaminergic boosts create positive emotional reinforcement and improve memory encoding, making interactions with ARCLAY both intuitive and rewarding.

2.4 Emotional Narrative and the Peak-End Rule

ARCLAY constructs a deliberate emotional trajectory: from initial uncertainty about prices to clarity and reassurance, and ultimately to empowerment through visible savings. Weekly savings summaries serve as emotional peaks in this journey. According to the peak-end rule, users disproportionately remember the most emotionally salient moment of an experience and its ending. By ensuring that each week ends with a clear, positive recap — for example, "You saved €18 this week" — ARCLAY strengthens long-term satisfaction and deepens attachment to the app.

3 Behavioral Economics Architecture

ARCLAY's pricing, cashback system and notification framework are designed using established principles of behavioral economics. These mechanisms reduce cognitive effort, counteract emotional biases, and guide users toward better everyday decisions without restricting autonomy. Each element—from pricing tiers to personalized nudges—is structured to trigger favourable value perceptions and long-term behavioural change.

3.1 Tiered Pricing and Cashback Structure

Tier	Price / Month	Cashback Rate	Colour
Starter	€2.99	1%	Mint Green
Smart	€7.99	4%	Sapphire Blue
Elite	€14.99	7%	Gold & Black

The Starter card establishes the "reference point" from which users evaluate higher tiers. The Smart card provides the best value-for-money ratio, while the Elite tier delivers maximum benefits for those seeking exclusivity and higher rewards. Neuroscientifically, the vmPFC integrates these price–benefit trade-offs into an overall sense of value, while the insula monitors the emotional "pain of paying". By offering immediate cashback and visible savings, ARCLAY helps reduce insula activation, making each subscription tier feel more acceptable and rewarding.

3.2 Anchoring, Decoy Effect and Charm Pricing

ARCLAY uses several cognitive framing strategies to strengthen perceived value:

- **Anchoring:** The €2.99 Starter price sets a low anchor. When users encounter Smart at €7.99, the increase feels proportionate and justified because it includes significantly higher rewards.
- **Decoy effect:** The Elite tier acts as a premium decoy. Its high price and high cashback highlight the Smart tier as the "rational middle choice", nudging users toward this option.
- **Charm pricing:** Ending prices at ".99" softens the emotional impact of payment. Consumers unconsciously round €7.99 down toward €7 rather than up to €8, reducing the perceived cost.

Together, these mechanisms shift attention away from the price and toward the benefits, reducing dlPFC effort typically required to evaluate complex financial decisions.

3.3 Loss Aversion, Mental Accounting and Social Proof

ARCLAY emphasises avoided losses rather than potential gains — a more powerful motivator according to behavioural research. Messages such as "You may lose €25–€30 this month if you shop at your usual store" activate loss aversion, prompting users to engage more consistently with recommendations. Mental accounting tools — category-based dashboards and weekly summaries — convert abstract savings into concrete amounts linked to specific purchases ("€1.42 saved on pasta", "€4.90 saved this week"). This segmentation helps users interpret their spending through intuitive cognitive "accounts", reinforcing the sense of progress. Social proof reduces uncertainty by showing that many others already optimise their spending with ARCLAY. Statements like "42,000 users saved with ARCLAY this week" signal reliability and legitimacy, and help lower perceived risk associated with adopting new financial tools.

3.4 AI-Powered Nudges and Decision Support

ARCLAY's AI uses OCR receipt scanning to identify spending patterns and generate personalised nudges that lower decision costs. These include:

- "Your Lactel milk is €0.45 cheaper at Carrefour today."
- "Your preferred shampoo is 20% off at Intermarché."
- "Buying fruit at Lidl instead saves you €2.10 this week."

These nudges reduce the cognitive load typically placed on the dlPFC, since users no longer need to compare prices manually. They also stimulate dopaminergic anticipation: the expectation of a small, instant reward (cashback or savings) reinforces engagement and makes ARCLAY's recommendations feel rewarding. Importantly, ARCLAY functions as a choice architect rather than a constraint: it suggests the best options while preserving full user autonomy. This balance encourages trust, boosts perceived value, and supports long-term behavioural change.

4 Loyalty, Retention and Habit Formation

Loyalty within ARCLAY results from the progressive consolidation of behaviours that are reinforced, simplified, and emotionally rewarded over time. Rather than relying on one-off incentives, ARCLAY builds a consistent ecosystem where cognitive effort is reduced, positive outcomes are highlighted, and users experience tangible progress. Habit formation emerges when routine interactions transform into automatic, low-friction behaviours supported by predictable reinforcement.

4.1 Reinforcement Loop and Habit Learning

ARCLAY structures behaviour around a reinforcement cycle — trigger → action → reward → repetition. Notifications act as triggers that reduce the decision cost by indicating the right moment to act (e.g., "Your usual pasta is €0.35 cheaper at Lidl — scan your receipt to track savings"). This decreases the need for users to actively monitor prices. When the user performs the action (scanning a receipt or checking the recommended store), ARCLAY delivers an immediate reward: a cashback animation, a savings badge, or a progress increase. These small, timely reinforcements activate dopaminergic reward circuits and strengthen memory encoding in the vmPFC, increasing the likelihood that the action will be repeated. By automating comparisons that would normally require dlPFC cognitive control, ARCLAY reduces mental fatigue associated with disciplined financial behaviour. Over time, repeated exposure to the reinforcement loop makes responsible choices feel easier and more natural, turning deliberate actions into stable habits.

4.2 Loyalty Levels and Endowed Progress Effect

Beyond monetary rewards, ARCLAY introduces loyalty levels such as Blue, Silver, and Gold (these loyalty levels are distinct from ARCLAY's banking tiers). These tiers provide structured, non-financial reinforcement by acknowledging engagement and progress. Once users see themselves advancing within a system — even if only

partially — the endowed progress effect increases motivation: people are more driven to complete a journey they feel they have already begun. This mechanism is particularly effective because abandoning ARCLAY would imply the loss of accumulated status, creating a subtle but powerful form of psychological inertia. As a result, loyalty levels not only reward past behaviour but also encourage future consistency.

4.3 Goals, Streaks and Motivation Dynamics

Weekly savings goals give users a concrete target, leveraging the goal-gradient effect: motivation naturally increases as individuals approach a defined objective. ARCLAY can highlight this progression with timely messages such as "Only €3.20 left to reach your weekly goal!". This creates a sense of imminent achievement that nudges users toward an additional optimised purchase. Streak mechanics reinforce consistency by turning repeated actions into a chain that users are reluctant to break. The emotional discomfort associated with losing a streak — a mild form of loss aversion — motivates continued engagement. Small streak bonuses, often tied to dopamine release, enhance the emotional reward of maintaining regularity. Together, goals and streaks stimulate both cognitive motivation and affective reinforcement.

4.4 Weekly Reports and the Peak-End Effect

Weekly savings reports provide users with a narrative structure that makes financial progress visible, meaningful, and emotionally satisfying. These summaries highlight not only total savings but also the most impactful decisions and potential missed opportunities. The clarity of this feedback helps users understand the consequences of their choices and reinforces the perception that ARCLAY genuinely improves their day-to-day finances. These reports also implement the peak-end rule: users disproportionately remember the most emotionally salient moment of an experience and its ending. By consistently ending each week with a positive, well-framed recap such as "You saved €18 this week," ARCLAY creates memorable emotional peaks that strengthen long-term satisfaction and retention.

4.5 The Financial Companion Effect

As ARCLAY's AI becomes more accurate, it shifts from a purely functional tool to a personalised financial companion. It learns the user's preferred stores, regular purchases, and typical spending patterns, allowing it to provide guidance at strategically relevant moments — for example, alerting users when their usual products are discounted or when they are approaching a self-imposed budget limit. This adaptive behaviour fosters trust and emotional closeness: the app appears to "understand" the user's habits and anticipate needs. Over time, this perceived companionship reduces the cognitive effort associated with managing expenses and increases the likelihood that users rely on ARCLAY as their default decision support system. The outcome is deeper loyalty, satisfaction, and organic advocacy as users share their positive experiences with others.

5 Neuromarketing Validation

Neuromarketing provides scientific validation for ARCLAY's strategic choices by measuring real-time cognitive and emotional reactions, rather than relying solely on self-reported feedback. Electroencephalography (EEG), combined with behavioural data and A/B testing, allows the team to verify whether the interface, pricing structure and reward mechanisms produce the intended psychological effects.

5.1 EEG Signals and Cognitive Indicators

Electroencephalography (EEG) detects neural signatures that reveal how users process the ARCLAY experience over time. Different frequency bands are associated with specific cognitive and emotional states:

- **Beta waves** reflect attention and analytical focus, indicating whether card comparisons or recommendations effectively capture engagement.
- **Alpha waves** indicate comfort and cognitive ease, suggesting that navigation feels intuitive and not mentally demanding.

- **Theta activity** increases during effortful or confusing moments, helping to identify friction points in the interface or decision flow.
- **Gamma waves** signal strong memory encoding and often appear during emotionally salient events such as cashback reception or personalised recommendations.

By tracking these patterns, ARCLAY can determine if interactions are smooth, rewarding and memorable, or whether certain features create unnecessary cognitive strain that should be redesigned.

5.2 Key Brain Regions in ARCLAY Interactions

Several brain regions are particularly relevant for understanding users' reactions to ARCLAY:

- The **insula**, associated with the pain of paying and risk perception, should ideally show reduced activation when ARCLAY highlights savings or prevents unnecessary overspending.
- The **ventromedial prefrontal cortex (vmPFC)** integrates emotional and rational information to form perceived value. Cashback messages, card tier comparisons and price recommendations are expected to engage this region.
- The **dorsolateral prefrontal cortex (dlPFC)** governs cognitive control and budgeting discipline. A well-designed interface reduces dlPFC demand by simplifying price comparisons and lowering decision fatigue.

Together, EEG frequency data and regional activation patterns help assess whether ARCLAY effectively lowers cognitive load, reduces the pain of paying and boosts perceived value at key decision moments.

5.3 Laboratory Protocol and A/B Testing Framework

A structured neuromarketing protocol enables ARCLAY to test and refine its behavioural architecture:

1. **Baseline EEG:** measure the participant's resting neural state to establish a reference.
2. **Brand video exposure:** present ARCLAY's value proposition and the slogan *"ARCLAY — The Smartest Way."* to capture initial emotional engagement.
3. **UI interaction (A/B versions):** ask participants to perform realistic tasks (scan a receipt, compare card tiers, read a personalised recommendation) on two interfaces. EEG reveals which version generates higher alpha (cognitive ease), lower theta (effort) and stronger beta engagement.
4. **Cashback simulation:** display a message such as "You saved €1.42 on this purchase" to test whether reward moments elicit gamma peaks associated with memory encoding.
5. **Delayed recall test:** evaluate how well participants remember card benefits, savings messages and recommendations, linking neural responses to actual retention.

In parallel with the lab study, ARCLAY conducts digital **A/B testing** with three conditions:

- a full behavioural version including nudges, loss-aversion framing and weekly reports,
- a reduced-nudge version with simplified messaging,
- and a neutral control interface with minimal behavioural influence.

Comparing these groups makes it possible to quantify the incremental impact of neuromarketing-informed features on real user behaviour.

5.4 KPI Framework

To validate design decisions, ARCLAY integrates four complementary categories of KPIs:

- **Neuromarketing KPIs:** alpha/theta ratios as indicators of cognitive ease, beta amplitude for attention, and gamma peaks during reward events for memory encoding.
- **Behavioural KPIs:** frequency of receipt scanning, interaction rates with recommendations and notifications, streak maintenance and upgrade rates across card tiers.
- **Financial KPIs:** average monthly savings per user, cashback redemption rate and ARPU.
- **Marketing KPIs:** weekly active users, referral rate, app ratings and written reviews.

Cross-analysing these metrics ensures alignment between neural responses, actual user behaviour and business performance, and helps prioritise future design iterations.

5.5 Ethical Design and GDPR Compliance

All neuromarketing activities are conducted under strict ethical and legal standards. Participants provide informed consent, and EEG as well as behavioural data are anonymised, securely stored and used only for analytical purposes. ARCLAY collects the minimum amount of data required to improve the service and fully complies with GDPR, including rights of access, correction, deletion and portability. Importantly, the neuromarketing strategy is designed to support users' financial well-being rather than exploit cognitive vulnerabilities, reinforcing both trust and long-term brand integrity.

Conclusion

ARCLAY transforms a stressful and cognitively demanding activity into a clearer, more intuitive and more rewarding experience. By integrating behavioural economics and neuromarketing across the entire user journey, the platform addresses both the emotional constraints and the cognitive biases that shape everyday financial decisions. The personas, neuroscientific profiles and emotional stages analysed in Phase 1 provide a precise foundation for understanding user needs and designing interventions that reduce anxiety, increase perceived control and enhance value judgments. The brand experience developed in Phase 2 — through colour strategy, slogan fluency and cognitive ease — builds trust and strengthens emotional engagement from the very first interaction. Phase 3 demonstrates how pricing, cashback, framing and AI-powered nudges align with well-documented behavioural mechanisms such as anchoring, loss aversion, mental accounting and reward anticipation, making each decision feel easier, smarter and more beneficial. Phase 4 shows how reinforcement loops, goal-gradient dynamics, streaks and personalised guidance support habit formation and long-term loyalty, gradually shifting ARCLAY from a functional tool to a genuine financial companion. Finally, the neuromarketing framework outlined in Phase 5 ensures that ARCLAY's design choices are not only theoretically grounded but empirically validated. EEG signals, regional activation patterns, A/B testing and behavioural KPIs provide a rigorous method for assessing cognitive load, emotional impact and memory encoding, ensuring that the platform effectively reduces dlPFC strain, lowers the insula-driven pain of paying and enhances vmPFC-based value integration. Through this integrated approach, ARCLAY positions itself not merely as a financial application, but as a long-term partner that helps users spend better, save more and regain control with confidence.

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