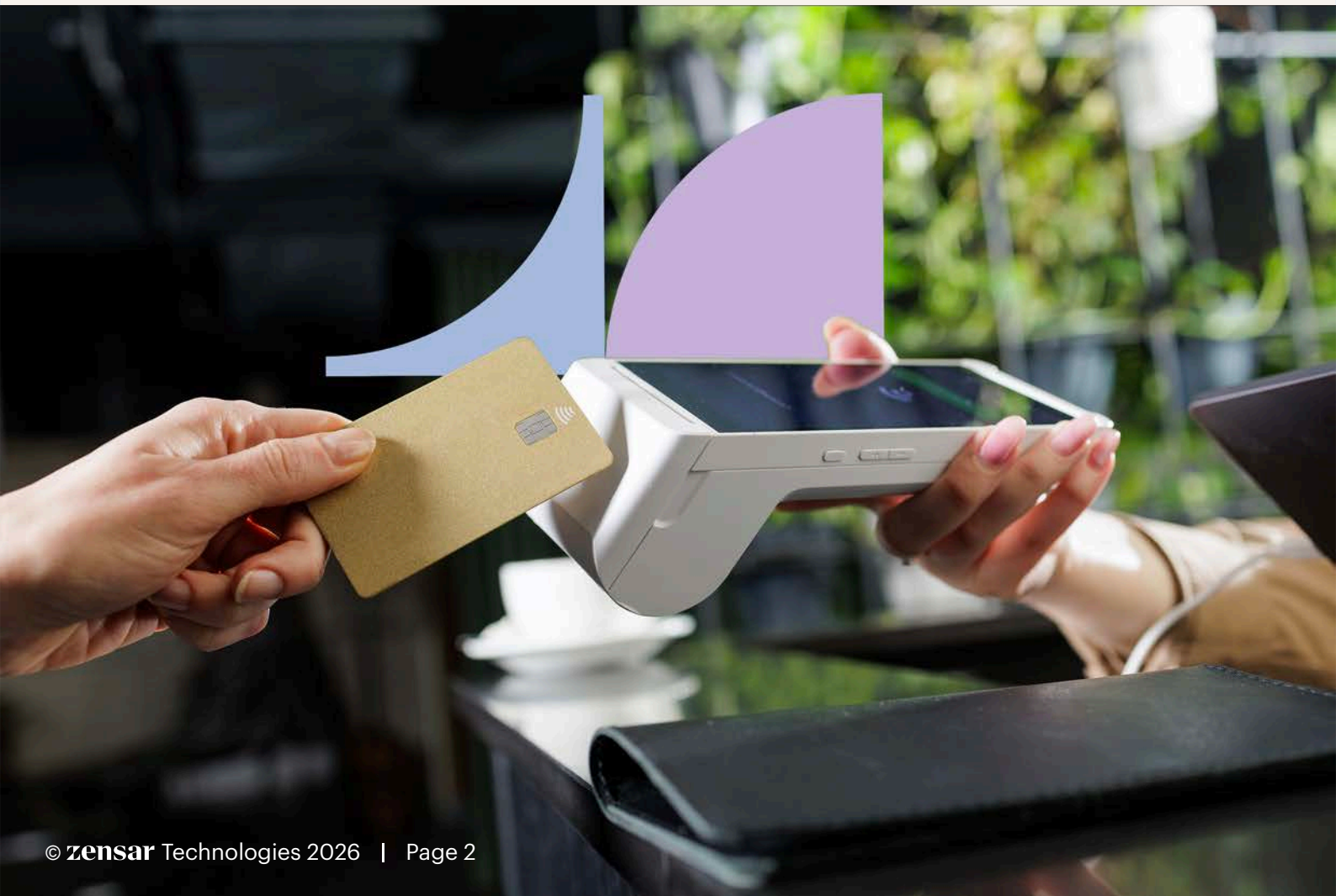
zensar
An RPG Company

The Next Decade of Plastic: Why Physical Cards Still Rule in a Digital World

POV

Given the rapid ascendance of digital payments today, it would seem reasonable to question the relevance of plastic in our wallets. But to understand the current ecosystem, one must look back over the last decade of payments evolution. In March 2014, EMVCo published the first Payment Tokenization Specification (v1.0). This pivotal framework defined interoperable roles for token service providers and introduced the mechanics for securely replacing a Primary Account Number (PAN) with constrained–use tokens. This innovation triggered the launch of Apple Pay (using NFC and a Device Account Number), alongside parallel initiatives such as the Visa Token Service (VTS) and Mastercard MDES (Mastercard Digital Enablement Service). The expansion of the Payment Tokenization Specification to version 2.0 in 2017 brought these tokenization capabilities into e-commerce environments.

The COVID-19 pandemic served as an unprecedented catalyst, pushing contactless payments and mobile wallet usage to historic peaks. Today, Mastercard and Visa report that in many markets, over 70% of in-person transactions are executed via tap-to-pay. Furthermore, virtual cards are rapidly transitioning from niche innovations to standard utilities within the orchestration of global payments.



The paradox: The unignorable scale of physical issuance

Given the overwhelming penetration of digital wallets and virtual cards, a fundamental question arises: **Why are physical cards still aggressively issued, circulated, and heavily used?**

The data firmly rejects the narrative that physical cards are becoming obsolete. The global economy still fundamentally runs on physical cards, driven by sheer scale and universal acceptance.

Global circulation: At the end of 2024, there were approximately **27 billion payment cards in circulation,** with continued growth confidently projected through 2029.

Continued production: The Smart Payment Association, the premier trade body for the cards and mobile payments industry, reported that roughly **2.5 billion payment cards and chip modules were shipped globally in 2025 alone.**

The funding mechanism: A crucial distinction must be made between the interface of a transaction and the funding source. Worldpay's Global Payments Report estimates that the value of digital wallet transactions reached **$15.7 trillion in 2024** and is on track to exceed $25 trillion by 2027. However, physical cards operating on major networks – Visa, Mastercard, AMEX, and UnionPay – collectively executed a staggering **$27.6 trillion in transactions.**

The critical insight here is that credit and debit cards remain fundamentally tethered to CASA and digital wallets; they serve as the underlying funding source. The rapid growth in digital wallet usage often drives, rather than displaces, the usage of the underlying physical card infrastructure.

The multifaceted utility and resilience of physical form factors

Despite the clear convenience of digital-first solutions, various infrastructural, demographic, and security constraints mean we cannot yet – and perhaps should not soon – transition to a fully digital global ecosystem.

Infrastructure, interoperability, and the PoS environment

The global base of point-of-sale (PoS) terminals is still overwhelmingly optimized for card-present, chip-and-PIN (EMV) acceptance.

Legacy reliance: Many small and medium enterprises (SMEs) and long-tail merchants continue to rely on low-cost terminals or legacy firmware that prioritize chip insertion, or even magstripe, over NFC and in-app payment capabilities.

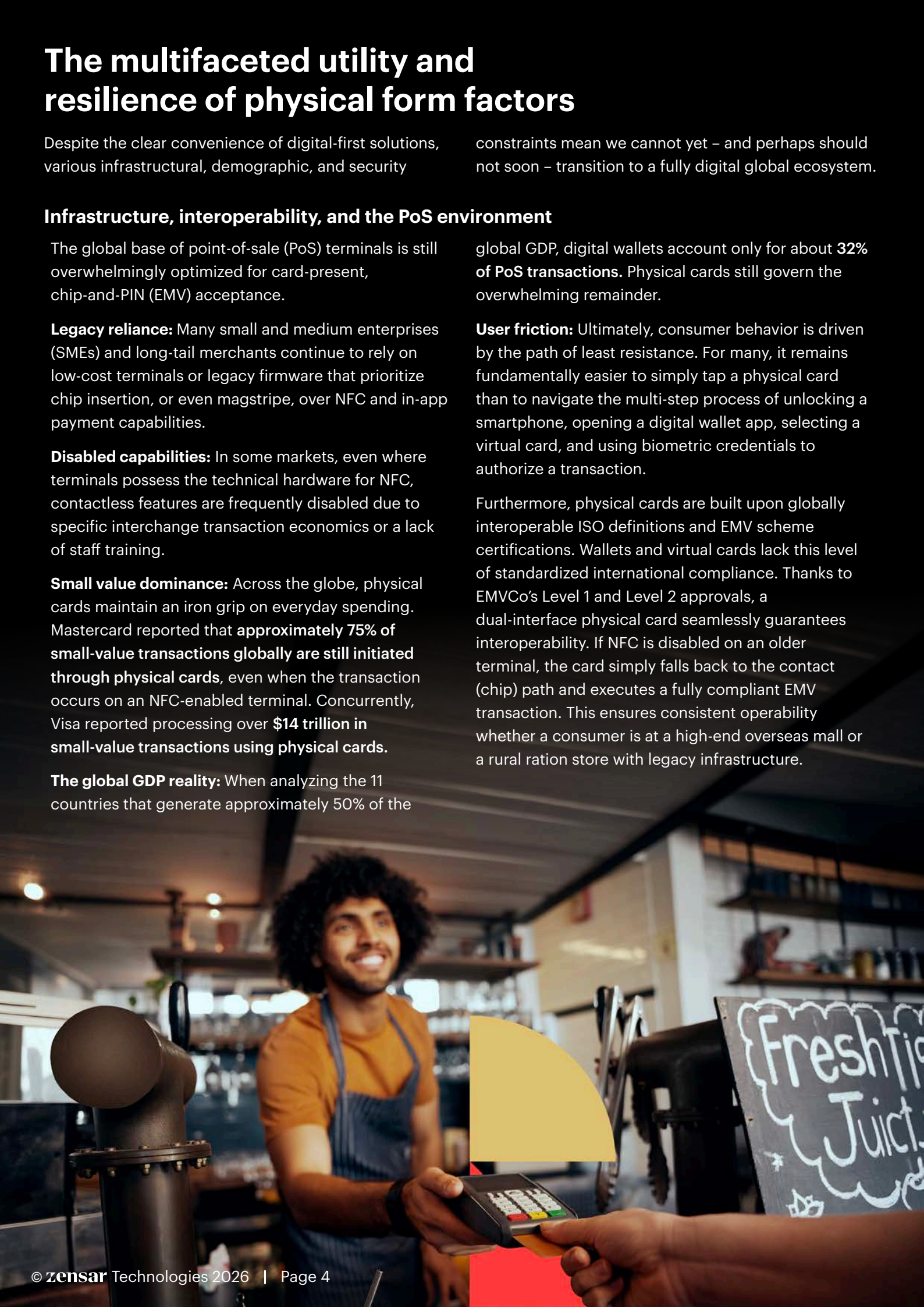
Disabled capabilities: In some markets, even where terminals possess the technical hardware for NFC, contactless features are frequently disabled due to specific interchange transaction economics or a lack of staff training.

Small value dominance: Across the globe, physical cards maintain an iron grip on everyday spending. Mastercard reported that **approximately 75% of small-value transactions globally are still initiated through physical cards**, even when the transaction occurs on an NFC-enabled terminal. Concurrently, Visa reported processing over **$14 trillion in small-value transactions using physical cards.**

The global GDP reality: When analyzing the 11 countries that generate approximately 50% of the global GDP, digital wallets account only for about **32% of PoS transactions.** Physical cards still govern the overwhelming remainder.

User friction: Ultimately, consumer behavior is driven by the path of least resistance. For many, it remains fundamentally easier to simply tap a physical card than to navigate the multi-step process of unlocking a smartphone, opening a digital wallet app, selecting a virtual card, and using biometric credentials to authorize a transaction.

Furthermore, physical cards are built upon globally interoperable ISO definitions and EMV scheme certifications. Wallets and virtual cards lack this level of standardized international compliance. Thanks to EMVCo's Level 1 and Level 2 approvals, a dual-interface physical card seamlessly guarantees interoperability. If NFC is disabled on an older terminal, the card simply falls back to the contact (chip) path and executes a fully compliant EMV transaction. This ensures consistent operability whether a consumer is at a high-end overseas mall or a rural ration store with legacy infrastructure.



Cash continuity, systemic redundancy, and device dependency

While the vision of a cashless society is widely promoted, the reality is that physical cards remain the primary means of accessing cash. ATMs continue to play a vital role in cash recycling, remaining essential for consumers and governments during emergencies and in low-connectivity environments.

While cardless cash withdrawal features have been available since 2019, they are hindered by technology, devices, and network dependencies. As a result, cardless methods execute only about 25% of withdrawals, largely due to stringent withdrawal amount capping. Physical cards, therefore, continue to dominate ATM usage.

Moreover, the usability of virtual cards (VCs) is entirely bottlenecked by a single point of failure: the mobile device. VCs depend absolutely on device availability, battery life, secure element/host card emulation (HCE) support, and up-to-date operating system patches. Wearable devices inherit these same provisioning and compatibility constraints. Losing or damaging a phone can leave a customer stranded until secure re-provisioning is complete. A physical card provides critical layered redundancy, operating entirely independently of phone batteries, OS versions, or app updates.

Security innovations: Combating the high tide of CNP fraud

Card-not-present (CNP) fraud represents an existential threat to digital commerce. In 2023, global card fraud losses were valued at approximately **$33.83 billion.** The US suffered a highly disproportionate share of this (approximately 42%), largely driven by CNP vulnerabilities. Looking ahead, global CNP fraud losses are projected to reach a staggering **$49 billion by 2030.** Globally, **roughly 70% of all reported fraud stems from CNP transactions.**

To combat this, physical cards are undergoing a radical security evolution right on the plastic itself, providing defenses that app-only remedies cannot match, particularly for consumers lacking NFC capabilities:

Dynamic CVV (dCVV): Acting similarly to a time-based one-time password (OTP), dCVV codes verify users in real-time. Often integrated directly into the card hardware, these codes can be configured to change dynamically, ranging from every 24 hours to every 2 minutes, or even on a per-transaction basis. Because these codes expire so rapidly, stolen card details become entirely useless in CNP scenarios.

Biometric payment cards: These specialized credit or debit cards utilize an embedded fingerprint sensor to authenticate transactions instead of relying on a PIN. Operating like a traditional contactless card, the authentication happens entirely on the card itself, ensuring premium security by guaranteeing only the physical cardholder can initiate the transaction.

Crucially, these mechanisms secure the same account across both e-commerce and in-store channels, preserving backward compatibility and ensuring universal merchant acceptance.

Psychological assurance, KYC compliance, and inclusivity

The conventional methodology of inserting a card and entering a PIN continues to offer immense psychological reassurance for consumers. Transactions using EMV standards can be successfully completed offline, provided they adhere to issuer risk parameters such as floor limits and offline data authentication (ODA). This establishes the physical card as a foolproof, "always working" artifact, corroborating a deeply ingrained fraud-prevention mindset that indirectly encourages its sustained use.

From a regulatory standpoint, while authorities in the EU, UK, US, and Australia now permit fully remote eKYC, financial institutions still firmly layer in physical controls. These include proof-of-address verification, postal PIN processes, and the physical issuance of the card. Banks are required to manage card production, EMV personalization, key injection, and PIN management exclusively within audited, PCI-compliant facilities. For specific products such as travel cards, the delivery of a physical card remains a mandated part of the approved control environment.

Demographics and accessibility also play a monumental role. Adoption of digital wallets varies drastically by age, income, and digital literacy.

Generational preferences: In the UK, which represents one of the most mature contactless markets globally, a 2025 report indicated that **only 25% of users over the age of 60 preferred mobile wallets over physical cards.** Outside of top-tier markets, Mastercard noted that roughly 75% of transactions are still completed by tapping a physical card at PoS.

Global accessibility: An estimated **2.2 billion people globally live with visual impairments.** Accessible physical card designs, such as the Mastercard Touch Card (which uses notches, Braille, and high-contrast elements), allow cardholders to orient and identify their cards entirely by touch, bypassing the need for complex accessibility software on a smartphone. For elderly family members, dependents, and new banking users, the physical card remains the most intuitive, easy-to-learn, and universally accepted tool.

Tangibility, brand loyalty, and solving the "plastic problem"

A physical card is far more than a payment tool; it is a portable credential, a brand touchpoint, and a symbol of status. Its tangibility matters deeply in customer servicing journeys, branch experiences, corporate allowances, and gifting. Premium form factors, such as heavy metal finishes (e.g., Platinum cards), foster an emotional attachment that strongly encourages use over virtual cards. Furthermore, physical cards offer visible differentiation at the PoS, reinforcing co-branded loyalty programs and driving in-store sign-ups in a way that digital-only models struggle to replicate without commercial impact.

Crucially, the industry is also aggressively addressing the "plastic problem" at scale.

Sustainable materials: An estimated **66% of global card shipments in 2024 and 2025 were manufactured using sustainable bodies,** including Rigid PVC (RPVC), eco-friendly PETG, recycled composites, and metals.

ESG alignment: Issuers and payment schemes are pivoting their portfolios to align with environmental, social, and governance (ESG) considerations. Many institutional issuers now offer these "green portfolios" at a premium price tier, successfully monetizing the strategic brand alignment, as consumers willingly pay for the brand value generated.

The power of the hybrid ecosystem

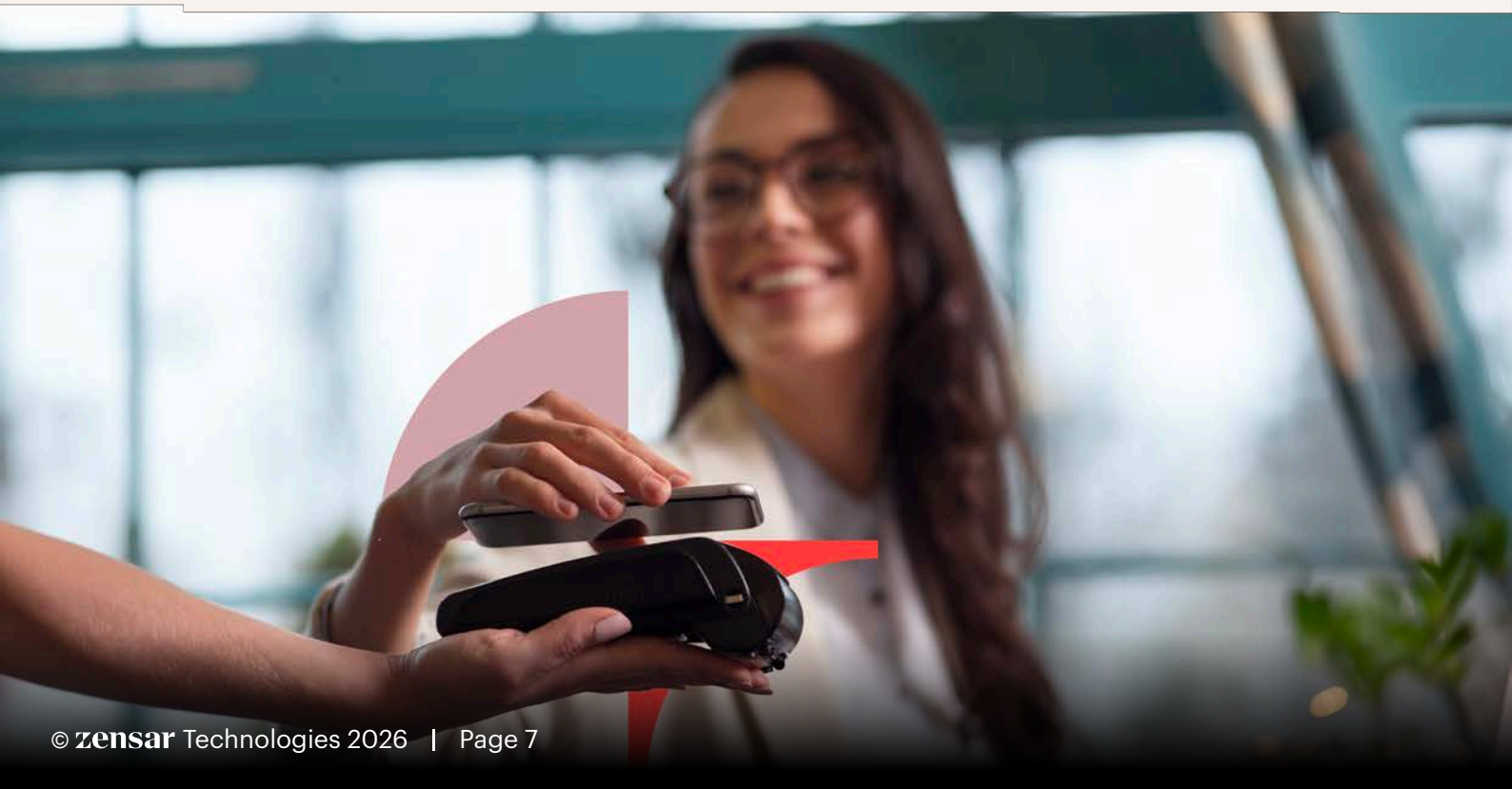
The data explicitly outlines that the winning pattern of the modern era is not digital-exclusive, but hybrid. The optimal ecosystem utilizes instant digital issuance to securely place a token in a user's digital wallet within minutes of approval, while the physical card serves as a reliable fallback.

This physical artifact remains universally accepted, offline-capable, and fundamentally ATM-ready, providing critical cash access across all devices, geographies, and connectivity conditions. Even in a "wallet-first" world, physical cards remain crucial funding sources and the primary enablers of cross-border commerce. Because of their near-universal acceptance, vital offline resilience, momentum in eco-materials, and highly visible security innovations like dCVV and biometrics, **physical cards are heavily positioned to remain highly relevant and necessary through at least 2035,** keeping global payments simple and trusted.

But, what if...

What if, say 20 years down the line, physical cards do not remain truly an enduring, indispensable format of commerce?

The core utilities that keep physical cards alive – ATM cash reliance, legacy PoS terminal compatibility, the battery dependence of smart devices, and offline EMV requirements – are ultimately technological limitations, not immutable laws of finance. If future infrastructures establish universally interoperable, device-agnostic biometric PoS systems, and if digital identity frameworks mature to offer true offline peer-to-peer redundancy, the physical fallback will lose its existential mandate. The very innovations currently saving the physical card embedded fingerprint sensors and dynamic hardware CVVs – may not represent the future of the card, but rather an extended, technologically brilliant sunset for a physical artifact destined to dissolve into the ambient digital environment eventually.



zensar

An RPG Company

At Zensar, we're 'experience-led everything.' We are committed to conceptualizing, designing, engineering, marketing, and managing digital solutions and experiences for over 145 leading enterprises. Using our 3Es of experience, engineering, and engagement, we harness the power of technology, creativity, and insight to deliver impact.

Part of the $4.8 billion RPG Group, we are headquartered in Pune, India. Our 10,000+ employees work across 30+ locations worldwide, including Milpitas, Seattle, Princeton, Cape Town, London, Zurich, Singapore, and Mexico City.

For more information, please contact: **info@zensar.com | www.zensar.com**