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DIGITAL TRANSFORMATION IN VIETNAM'S EXTERNAL ECONOMIC ACTIVITIES AND FOREIGN-ORIENTED SERVICES: CURRENT SITUATION, CONSTRAINTS AND POLICY PRIORITIES

Abstract: This article examines digital transformation in Viet Nam's external economic activities and services connecting the country with foreign users and overseas Vietnamese. Drawing on transaction-cost economics, institutional complementarity and organisational capability, it combines official statistics for 2015-2025 with documentary evidence and policy developments up to November 2026. The analysis identifies substantial progress in paperless trade and a narrowing domestic-cross-border implementation gap, while documenting incomplete trade processes and examining coordination in finance, investment and foreign-oriented services. It argues that further gains depend on legally accepted, reusable data, sustained organisational adoption and accountability for complete transactions. Policy priorities centre on integrating selected processes,

supporting smaller firms and applying the strategic technologies in Decision No. 21/2026/QD-TTg where their economic benefits can be demonstrated.

Keywords: digital transformation; external economic activities; foreign-oriented services; trade facilitation; interoperability; strategic technologies; Viet Nam.

1. Introduction

Digital transformation matters to an open economy at the points where a transaction can succeed or fail: finding a credible partner, proving the origin of a product, obtaining an approval, receiving payment and resolving a problem. Viet Nam has a strong economic interest in improving these connections. Official estimates put merchandise exports and imports together at USD 930.05 billion in 2025, while service exports reached USD 30.31 billion and service imports USD 40.54 billion [1]. At this scale, repeated data entry, uncertain processing times and incompatible records impose costs far beyond the office in which they arise.

The policy question has also changed. Providing an online channel remains useful, but the value of that channel depends on what happens after a user submits information. An exporter may file electronically and still face a disconnected certification or financing process. An investor may obtain information quickly but encounter uncertainty during implementation. A visitor may discover a destination online yet struggle with payment or service support. These examples identify the unit of analysis adopted here: the complete transaction or service process, including the organisations and foreign counterparts on which its completion depends.

Three bodies of research help explain this problem. Digital economics identifies reductions in the costs of searching, transmitting and verifying information [2]. Research on digital transformation emphasises changes in organisations and value creation [3]. The World Bank’s analysis of digital dividends shows why skills, competition and accountable institutions must develop alongside technology [4]. Together, these perspectives suggest that

investment in software is only one part of an economic transformation. The connections between systems deserve equal attention.

This article asks where Viet Nam has made verifiable progress, which constraints still interrupt cross-border activity, and how policy should order its next investments. Its contribution is to connect trade, finance and investment with foreign-oriented services in a common framework, while preserving the differences between their economic functions and statistical measures. It then translates the diagnosis into priorities for institutions, interoperable platforms and organisational capability. Particular attention is given to the current strategic technology list, adopted under Decision No. 21/2026/QD-TTg, rather than treating emerging technologies as an undifferentiated solution [5].

2. Analytical framework and research approach

2.1. Scope and economic mechanisms

External economic activities are understood here as transactions and productive relationships connecting Viet Nam with the world, principally international trade, finance and investment. Foreign-oriented services comprise commercial, administrative, informational and promotional services through which firms and public institutions engage foreign customers, investors, visitors and overseas Vietnamese. This is an analytical category, not a single balance-of-payments item. Consular assistance and investment information can facilitate economic activity without themselves constituting service exports. For analytical purposes, applications are grouped into trade and logistics; finance and investment; and foreign-oriented services. International digital rules affect all three domains.

A second distinction concerns the role of digital technology. Digitally ordered trade concerns how an order is placed; digitally delivered trade concerns how a service crosses the border. The international measurement handbook treats these as related but different dimensions [6]. A room booked online still requires

a physical stay. Electronic customs clearance can facilitate a shipment whose production and delivery remain physical. Accordingly, tourism receipts, merchandise exports and online retail turnover cannot be combined into a meaningful measure of international digital trade.

First, digital tools can reduce information and coordination costs. Search and translation help buyers and sellers find each other; structured records make documents easier to check and reuse; tracking supports coordination among producers, logistics providers and customers. These mechanisms follow the economic logic developed by Goldfarb and Tucker [2]. Their effects need not be uniform. Better information can increase competition, but inaccurate information can spread faster as well. Physical delivery, credit risk and the enforcement of obligations continue to matter.

Second, institutional acceptance determines whether digital information has operational value. The same record may be technically readable yet unusable for a bank, regulator or foreign authority. Electronic transferable records illustrate the distinction. UNCITRAL's model law requires reliable methods for identification, control and integrity; an image of a paper document does not automatically perform these functions [7]. The benefits of digitalisation therefore depend on legal and procedural arrangements that allow the relevant participants to use information throughout the transaction.

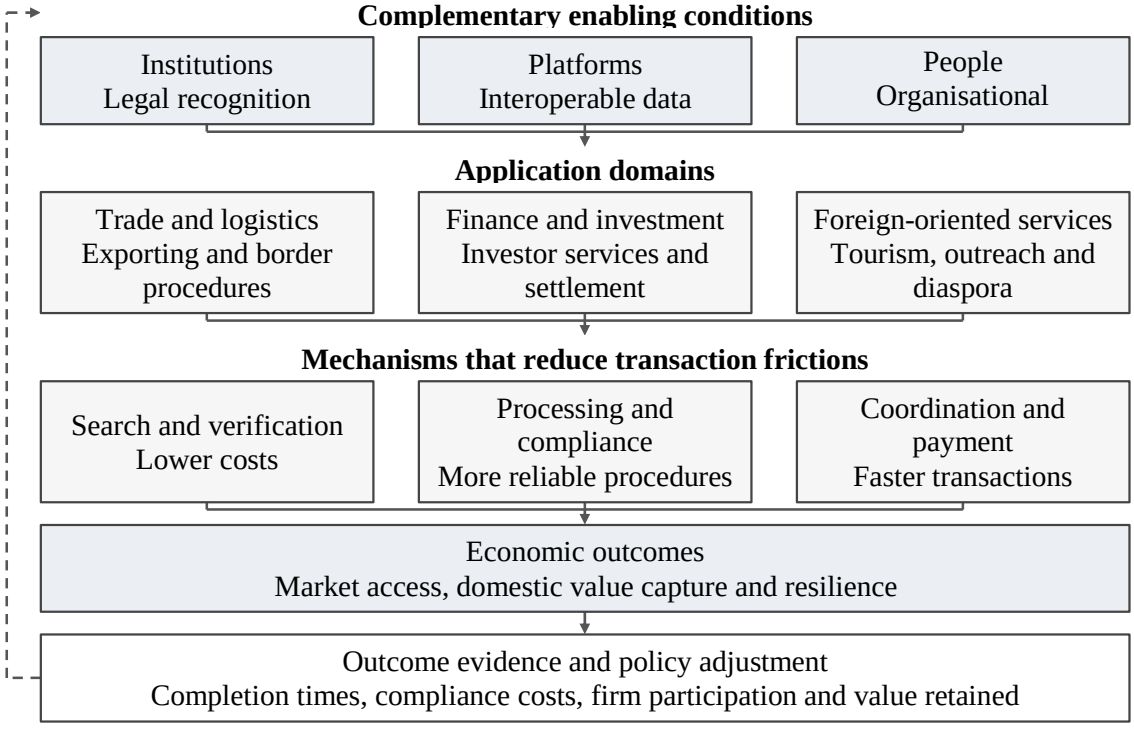
Third, organisations must be able to use new systems consistently. Staff need domain knowledge, incentives and time to change routines, while managers must decide who owns the data and resolves exceptions. This connects organisational transformation with the complementary conditions identified in the digital-dividends literature [3; 4]. A technically successful installation may have little economic effect if employees return to parallel spreadsheets or paper files. The relevant capability is sustained use in a working process.

Finally, participation in a platform creates both opportunities and dependence. Two-sided-market theory explains why attracting users on one side

can raise the value of participation on the other [8]. For a Vietnamese supplier, this may widen access to foreign demand. However, the economic benefit also depends on commissions, control over customer relationships and the ability to move data or business to another provider. Greater sales visibility is not sufficient evidence of stronger bargaining power.

Figure 1 integrates these mechanisms. Institutions, interoperable platforms and data, and human and organisational capability are complementary. Together they can reduce costs, improve coordination and support market access, domestic value creation and resilience. The feedback link connects observed problems with policy adjustment. This framework guides the evidence and policy analysis; it does not estimate causal effects.

Figure 1. Digital transformation and economic value



Feedback informs policy and process adjustment across the three domains.

Source: Authors' synthesis drawing on [2-4; 7; 8]. Arrows represent proposed analytical relationships, not estimated effects.

2.2. Evidence and method

The study combines descriptive trend analysis with structured document analysis. The quantitative window covers 2015-2025, combining six biennial survey rounds with annual visitor data. Policy and implementation evidence is reviewed up to 3 November 2026. Sources include the UN Global Survey on Digital and Sustainable Trade Facilitation, Viet Nam's statistical authorities, original legal instruments and official reports by implementing organisations. The cases are selected to represent different dependencies: border documentation, payments and investment procedures, and services used by foreign visitors and overseas Vietnamese. They are illustrative rather than a statistically representative sample.

Evidence is separated into three layers. Readiness concerns the availability of infrastructure and capabilities; implementation concerns whether a process or measure operates; economic outcomes concern time, cost, reliability and value generated. The UN survey belongs primarily to the second layer. Its implementation categories are scored from zero to three and normalised against the maximum. The overall score uses 31 measures, while the paperless and cross-border paperless subindices use nine and six respectively. Expert assessments undergo verification and government validation [9]. These scores are not percentages of transactions conducted electronically.

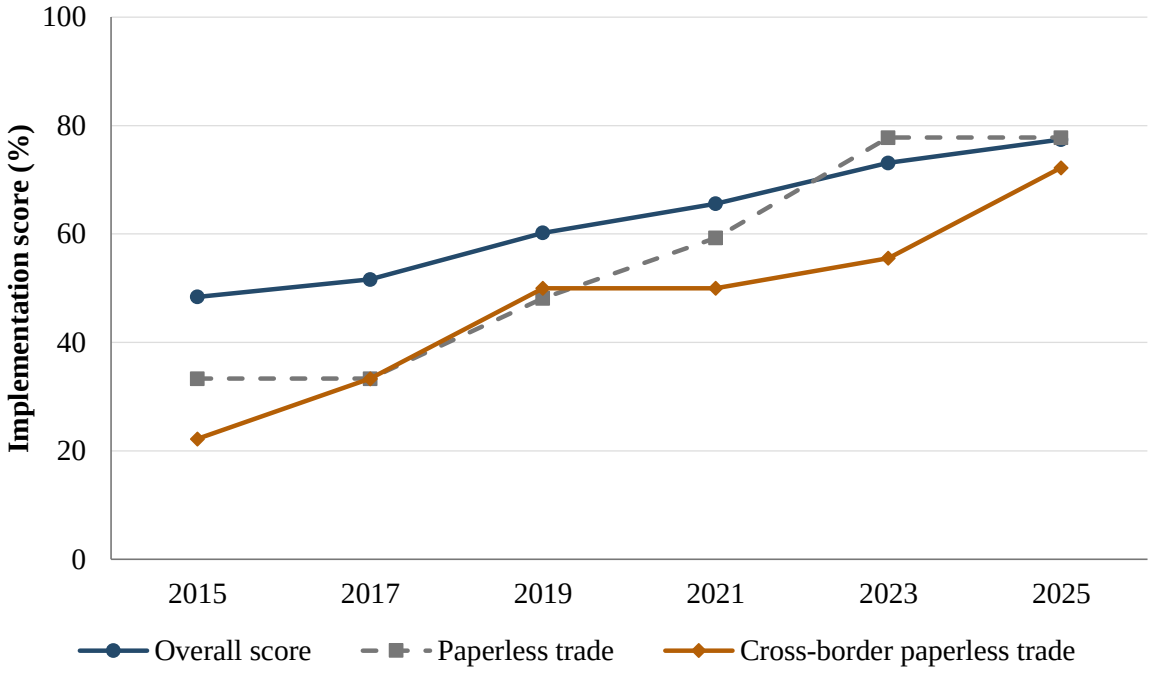
The published survey series provides a consistent organising framework across six rounds, although some item wording has changed. Broad trajectories are therefore read alongside individual measures, with the closest decomposition restricted to 2023-2025 [10]. Changes in ordinal scores describe implementation, not proportional changes in economic efficiency. Annual visitor observations are drawn from official annual releases and retain their reported precision; they are not a retrospectively harmonised tourism series. Macroeconomic growth is used to establish scale and exposure. The analysis does not attribute changes in exports, investment or arrivals to digital transformation.

3. Current situation

3.1. Progress in paperless trade and the remaining connections

Viet Nam's border-related digital transformation has advanced substantially over the decade. The overall UN trade facilitation score increased from 48.39 in 2015 to 77.42 in 2025. Over the same period, paperless trade rose from 33.33 to 77.78, while cross-border paperless trade rose from 22.22 to 72.22 [10]. Figure 2 shows distinct stages: relatively limited domestic paperless progress in the first two rounds, faster improvement through 2023 and a subsequent acceleration in cross-border implementation.

Figure 2. Trade facilitation implementation in Viet Nam, 2015-2025



Source: UN Global Survey on Digital and Sustainable Trade Facilitation, six biennial rounds [9; 10]. Scores are percentages of the maximum implementation score. The overall measure includes the two digital subindices and other measures; the three series are not additive.

The latest movement changes the diagnosis. Between 2023 and 2025, the domestic paperless score remained at 77.78, whereas the cross-border score increased from 55.56 to 72.22. Using the underlying scores, the gap narrowed from 22.22 to 5.56 percentage points. Cross-border implementation was therefore catching up in this period [10]. The smaller aggregate gap shifts attention towards

the measures that remain incomplete and the practical conditions under which firms can use the systems together.

A decomposition makes the recent change more informative. The overall raw score increased from 68 to 72 out of 93. Three of these four additional points came from cross-border measures: electronic exchange of customs declarations moved from planning to partial implementation, and paperless collection of payment under letters of credit moved from non-implementation to partial implementation. The remaining point reflected stronger implementation of the national framework for cooperation among border agencies [9; 10]. This calculation identifies where the survey recorded progress. It does not assign three quarters of any economic gain to those measures.

The unresolved issue is the completeness of the transaction. A functioning single window and electronic customs submission can coexist with only partial implementation of permits, certificates and payment processes. Table 1 connects selected survey observations to the questions that an operational assessment should investigate. Its final column is an interpretation, not an additional survey finding. The distinction matters because a national implementation category cannot reveal how often a particular firm encounters a manual exception.

Table 1. Selected implementation gaps and their operational significance

Measure	2023	2025	Question for transaction-level assessment
Electronic customs declarations	Full	Full	Can the same validated data be reused for permits, logistics and finance?
Electronic import/export permits	Partial	Partial	Which approvals still require repeated entry or physical documents?
Cross-border exchange of origin and SPS certificates	Partial	Partial	Which documents and partner jurisdictions accept electronic exchange?
Paperless collection under letters of credit	None	Partial	Can a firm complete presentation, examination and payment electronically?

Measure	2023	2025	Question for transaction-level assessment
Measures enabling SME access to the single window	Planning	Planning	Do smaller firms receive affordable integration and practical assistance?

Source: UN survey country observations for 2023 and 2025 [10]; authors' interpretation. SPS = sanitary and phytosanitary. The SME measure is outside the 31-measure overall score. "Full" denotes the survey category and does not establish universal use.

The next stage of trade facilitation should therefore connect the successful components. An export record should be usable, subject to access rights and validation, across the relevant customs, certification, logistics and financing processes. This requires agreement about data definitions, responsibility for errors and acceptance by the receiving party. The economic objective is to reduce repeated verification and unpredictable delays, rather than merely increase the number of documents that can be uploaded.

3.2. Payments and investment facilitation

Payments show how digital cooperation can reach users directly, while also revealing the limits of a technological connection. In September 2026, NAPAS reported QR payment links with Thailand, Laos, Cambodia, China, the Republic of Korea and Singapore. The report distinguished the directions and stages of deployment, including a two-way Singapore connection and completed inbound Korean payments with the reverse direction still being expanded [11]. These are corridor-specific developments. They should not be read as evidence that every user, merchant or type of international payment is already covered.

The economic value of a payment link depends on the entire service. A successful scan must lead to clear currency conversion, affordable charges, dependable settlement and a workable refund process. The Financial Stability Board's framework usefully separates cost, speed, access and transparency, and distinguishes wholesale, retail and remittance payments [12]. This is particularly relevant for Viet Nam: a convenient visitor payment and an exporter's

documentary settlement solve different problems. Progress in one segment cannot stand in for performance in the other.

Investment presents a related coordination challenge. Viet Nam's realised inward FDI was estimated at USD 27.62 billion in 2025, while the foreign-invested sector accounted for 77.3% of merchandise exports [1]. These figures establish the importance of investment relationships, but they do not demonstrate the effectiveness of digital investment promotion or measure domestic value added. The policy issue is how information systems help viable projects move from enquiry through approvals to implementation, and how domestic firms become qualified suppliers.

UNCTAD's World Investment Report 2024 stresses that digital facilitation must extend beyond initial registration: efficient entry procedures provide limited benefit if later administrative steps remain opaque [13]. Applied to Viet Nam, this suggests a practical sequence linking verified site information, sectoral requirements, project status and investment aftercare. A shared case record could help identify delayed decisions and conflicting information without transferring each agency's legal authority to a new platform. Its success should be judged by resolution time and project implementation, not visits to a promotional website.

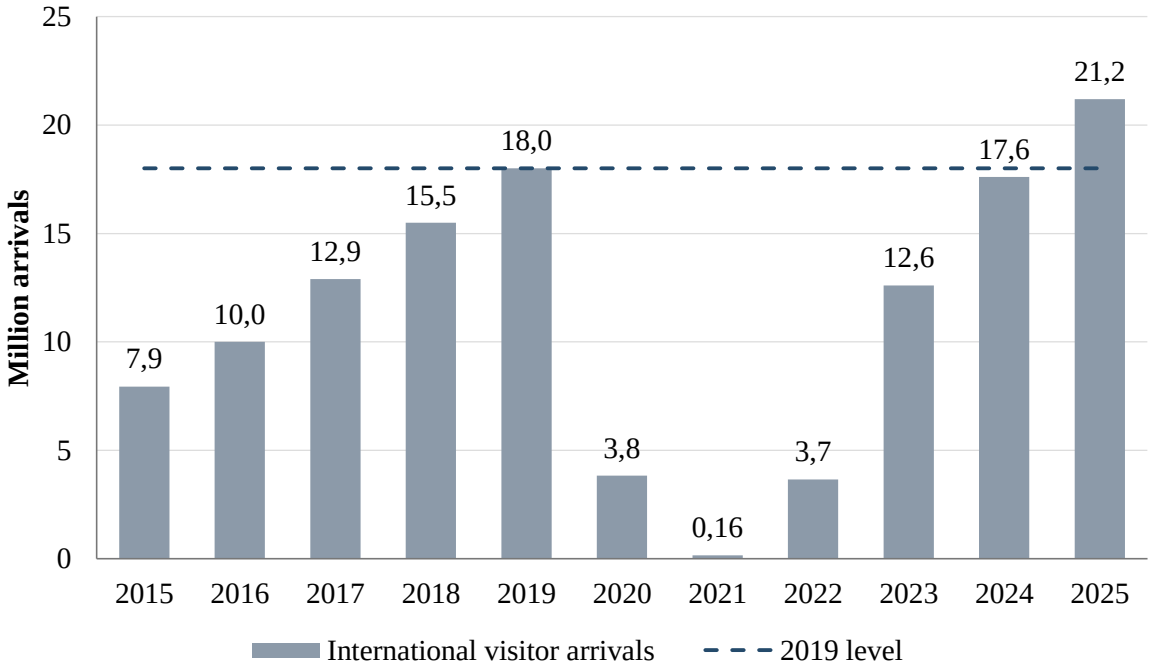
3.3. Tourism and services connecting Viet Nam with foreign users

The demand for foreign-oriented services has expanded, but its history includes a severe interruption. International visitor arrivals increased from about 7.9 million in 2015 to 18.0 million in 2019, fell to approximately 0.16 million in 2021 and recovered to nearly 21.2 million in 2025. Figure 3 preserves this break rather than presenting recovery as an uninterrupted trend [1; 14-16]. The observations count international visitor arrivals; they are not limited to leisure tourists, a distinction particularly relevant during pandemic restrictions.

The service-export structure reinforces the importance of these connections. In 2025, travel-related services accounted for 50.2% of service

exports, while transport accounted for a further 29.0% [1]. The first figure underscores the importance of visitor services; the second also covers activities serving merchandise trade. Digital tools can improve information, bookings, payment and problem resolution across these services, although much of their delivery remains physical. In tourism, better promotion cannot compensate indefinitely for poor transport connections, overcrowding or inconsistent local service quality.

Figure 3. International visitor arrivals to Viet Nam, 2015-2025



Source: GSO/NSO annual socio-economic reports [1; 14-23]. Values are official annual estimates or rounded figures, in millions; 2021 is labelled to two decimal places. The dashed line marks the approximately 18.0 million arrivals recorded in 2019. Arrivals describe service demand, not the causal effect of digitalisation.

Tourism policy recognises the integration problem. The programme attached to Decision No. 2450/QD-BVHTTDL of July 2025 identifies uneven digital development and sets out work on shared platforms, data, smart tourism and service quality [24]. These provisions establish policy direction, not proof that all targets have been achieved. For foreign users, the most valuable integration would allow reliable information to follow a journey from planning and entry

formalities to local services and subsequent assistance. Providers need a manageable way to keep that information accurate.

Public services are another part of this external interface. The Ministry of Foreign Affairs reported online appointment booking, fee payment and application-status tracking for consular certification and legalisation in February 2025 [25]. These functions can reduce uncertainty and unnecessary visits. The evidence does not establish that every consular procedure is fully online. More broadly, services for overseas Vietnamese can support business links and the circulation of knowledge when users can verify requirements, reach the responsible office and receive a timely answer.

Country promotion and economic diplomacy should be assessed through the quality of the relationships they help establish. Digital communication can draw attention to a destination or investment opportunity, but reliable follow-up converts that attention into a transaction. Overseas missions can contribute verified market information, relay regulatory changes and help route unresolved institutional problems. Their role is strongest when information is connected to responsible domestic agencies and professional due diligence, with clear limits on what public authorities can verify or guarantee.

4. Constraints on deeper transformation

The evidence points to a coordination problem with several economic dimensions. Progress in individual systems is real, especially in border procedures and payment connections. A reliable online interface cannot ensure completion when a required approval, verification or settlement remains unreliable. Users also bear the cost of resolving exceptions between organisations. The following constraints explain why implementation can advance without producing equally broad improvements in competitiveness.

First, organisational fragmentation can survive the move online. Each agency or provider has reasons to optimise its own task, while the user bears the

cost of carrying information between them. This creates a collective-action problem: one institution pays to improve data quality or an interface, but other institutions share the benefit. Viet Nam now has a stronger legal foundation, including the amended Electronic Transactions Law, the Data Law, the Personal Data Protection Law and the Digital Transformation Law [26-29]. The operational task is to translate these frameworks into compatible responsibilities, lawful data access and procedures for correcting errors.

Interoperability has three separate requirements. Systems must exchange information technically; participants must interpret it consistently; and the recipient must be able to accept it legally and procedurally. Connecting two databases resolves only part of the problem. A mismatch in product identifiers or certificate status can still stop a shipment. Likewise, a technically available payment record may be insufficient for a financing decision. This is why an integration project needs legal and business-process expertise alongside software engineering.

Second, adoption costs extend well beyond purchasing technology. Firms must clean records, train staff, reorganise tasks and maintain security. Cirera and colleagues' pre-pandemic study of Vietnamese establishments found that broad internet access coexisted with limited use of more advanced technologies, and that management quality was associated with adoption [30]. These findings are a historical baseline rather than a current national adoption estimate. They nevertheless identify an economically important mechanism: infrastructure creates an opportunity, while organisational capability determines whether a firm can use it.

More recent field evidence makes the persistence problem concrete. In a 2025 update on a Vietnamese SME programme, Bruhn, Tan and Tran reported that use of a cloud-based enterprise platform among firms offered training and support fell from close to 80% after initial training to 35% around eighteen months later [31]. The participants were self-selected, so the result is not a national rate.

It shows why initial take-up is an incomplete measure of success. Support should follow firms into routine operation, identifying whether managerial commitment, staff time or the fit with existing work prevents continued use.

Third, integration may increase dependence as well as reach. A supplier can gain foreign customers through a platform while losing control over customer data, visibility or the terms of access. Public agencies face a related risk when bespoke systems make switching providers costly. Platform economics explains the strength of network effects [8]; the policy implication developed here is to treat portability, transparent contractual terms and alternative routes to market as economic capabilities. Domestic value captured should be examined alongside transaction volume.

Fourth, trust and resilience become more valuable as systems connect. An incorrect record can travel farther, and a service outage can affect several activities at once. For AI, the relevant risks include inaccurate classification, unreliable translation and decisions whose basis cannot be adequately examined. NIST's AI Risk Management Framework supports evaluation throughout the system's life cycle [32]. In external economic services, this implies documented validation, access controls, audit trails, human responsibility for consequential decisions and tested recovery procedures. Reliability is part of the service offered.

Finally, measurement often stops before the economic result. Counts of portals, accounts or electronically submitted files say little about repeated requests, completion time, rejected documents or user costs. The UN survey is valuable because it distinguishes measures, but it remains an implementation assessment [9]. Operational evaluation must add observations from actual transactions. Without them, policymakers cannot tell whether a new platform removes a constraint, shifts work to the applicant or simply duplicates an existing channel.

These constraints are mutually reinforcing. Weak data quality raises verification costs; repeated verification reduces the incentive to reuse data; limited

use makes it harder to justify integration expenditure. Small firms are particularly exposed because many compliance and learning costs are fixed. The resulting policy challenge is to break this cycle at a few consequential points, where public coordination can lower costs for many users and where the resulting gains can be observed.

5. Policy priorities

5.1. Select technologies by the economic problem they solve

Viet Nam's current strategic technology policy offers a more precise starting point than a general appeal to innovation. Decision No. 21/2026/QD-TTg, effective from 1 July 2026, replaces Decision No. 1131/QD-TTg of 2025 and identifies ten strategic technology groups. Its digital technology group explicitly covers artificial intelligence, big data, digital twins, cloud and edge computing, the Internet of Things and blockchain. Next-generation mobile networks, robotics and automation, semiconductor chips, and cybersecurity and quantum technologies are separate groups [5]. These categories establish strategic direction; choosing an application still requires an economic justification.

Four questions should guide that choice. What cost, delay or risk is the project expected to reduce? Which actors must participate for the benefit to occur? What legal, data and organisational conditions are required? How will performance be compared with a simpler alternative? Table 2 applies these questions to technologies directly relevant to external economic activities. The applications and indicators are proposals by the authors, not claims that the technologies have already been deployed nationwide.

Table 2. Strategic technologies and priorities for practical application

Technology	Relevant application	Condition for economic value	Indicator to test
AI and big data	Multilingual market intelligence; document screening; investor and visitor support	Verified domain data, testing against real cases, expert review and clear responsibility	Error rate; staff time per completed case
Cloud computing	Shared services for SMEs; connected investor and service records	Common identifiers, lawful access, service continuity and data portability	Repeat use; integration cost; recovery time
IoT and edge computing	Cold-chain monitoring; cargo condition and location; local event processing	Calibrated sensors, reliable connectivity and action when exceptions occur	Spoilage; time to detect and resolve an exception
Digital twins	Port, logistics or destination capacity analysis	Updated operational data and a validated representation of the physical system	Forecast accuracy; congestion or resource use
Blockchain	Shared provenance or record histories involving independent parties	A demonstrated need for shared control, verified inputs and legal acceptance	Verification cost; reconciliation errors
Next-generation networks and automation	Selected port, warehouse and industrial logistics operations	Demand that justifies investment, compatible equipment and skilled maintenance	Downtime; handling time; whole-life cost
Cybersecurity and quantum-related preparedness	Protection of critical databases, identities and payment connections	Risk-based controls, incident response and appropriate cryptographic planning	Recovery performance; losses and service disruption

Source: Technology categories from Decision No. 21/2026/QD-TTg [5]; authors' proposed applications and evaluation criteria, informed by [7; 32]. The table selects relevant technologies from several groups; it does not reproduce the full ten-group list.

AI illustrates why a precise application matters. Machine translation can reduce a specific barrier to trade: Brynjolfsson, Hui and Liu found a 10.9% increase in exports after the introduction of a new translation system on the platform they studied [33]. The estimate is specific to that setting. For Viet Nam, an appropriate starting point is to test multilingual product descriptions, market

guidance or support responses against expert-reviewed material. A system that answers quickly but misstates a certification requirement can increase the user's costs.

Other technologies require equally careful distinctions. A digital twin is useful when it represents a changing physical process accurately enough to inform decisions; a visual model alone does not establish that capability. IoT sensors require calibration, maintenance and an operational response to their readings. Blockchain can preserve a shared record history, but it cannot establish that the original input was truthful. The technology-neutral approach of UNCITRAL is therefore useful: select a method that performs the required legal and commercial functions reliably [7].

Strategic autonomy should be understood as the capacity to make and sustain informed choices. Domestic cloud services, cybersecurity expertise, semiconductor capabilities and appropriate open standards can support that capacity. It does not follow that every platform must be rebuilt locally or that all advanced technologies should enter routine services immediately. Frontier research and industrial development have a different investment horizon from improving an export permit or visitor payment. Public funding should make that distinction explicit.

5.2. Integrate processes and build the capacity to use them

First, organise priority programmes around complete processes. A manageable initial portfolio would cover an export documentation-to-payment process, an investor enquiry-to-project-implementation process, and a visitor information-to-payment-and-assistance process. Each should have an accountable coordinating authority and named participating institutions, while retaining their statutory responsibilities. The first deliverable should be a map of repeated information requests, approvals and exceptions. This makes the proposed improvement concrete before software procurement begins.

For trade, the task is to connect customs, relevant permits and certificates, logistics records and financial-document requirements where legally possible. For investment, it is to connect reliable information with decisions and aftercare. For visitors and overseas Vietnamese, it is to make requirements, payments, appointments and assistance understandable across channels. These processes have different institutions and users, but they share a need for reliable handovers. The common design principle is that verified information should not be repeatedly recreated without a justified reason.

Second, invest in reusable data arrangements and international acceptance. Common definitions, identifiers, access permissions and correction procedures should precede large-scale integration. ASEAN's electronic Form D provides a concrete regional example: member states moved to full electronic issuance and acceptance through the ASEAN Single Window from 1 January 2024, while retaining a paper fallback for technical problems [34]. A bounded document and partner arrangement can therefore make progress before every record is connected. Its scope also explains why success in one certificate system can coexist with partial implementation in a broader national survey.

Economic diplomacy can help extend this approach. Priority negotiations should identify records, signatures and data exchanges that affect actual trade and investment, and clarify recognition, liability and dispute handling with partner jurisdictions. Technical pilots and rule-making should inform each other. The objective is a transaction that both sides can complete with confidence. Participation in international discussions becomes more valuable when supported by evidence on where Vietnamese firms encounter unnecessary duplication or exclusion.

Third, support sustained adoption by smaller firms. Assistance should combine diagnosis, integration and practical training in a chosen business function, with follow-up after implementation. Export documentation, inventory records, customer management and electronic invoicing offer concrete entry

points, depending on the firm's needs. Shared services can spread fixed costs, but participating firms should retain access to their own records and a realistic exit option. The adoption evidence from Viet Nam supports placing managerial responsibility and continued use at the centre of support design [30; 31].

Training should join economic and technical knowledge. Export staff need to understand both documentation rules and the data used to satisfy them; investment officers need to assess project information and maintain reliable case records; tourism providers need multilingual service skills alongside booking and payment tools. Universities, professional associations and public agencies can build short programmes around real cases. A certificate of attendance is a weak outcome. A completed task with fewer errors is more useful evidence.

Fourth, connect digital facilitation to domestic value creation. Investment systems should help domestic suppliers understand qualification requirements and connect to suitable opportunities, while protecting commercially sensitive information. Tourism services should enable local providers to maintain accurate listings, manage bookings and resolve complaints. Export support should improve product information, standards compliance and customer relationships. These uses aim to strengthen the capabilities through which Vietnamese firms retain value, rather than treating growth in platform transactions as a sufficient development result.

Fifth, incorporate trust and service continuity from the start. Projects should budget for data stewardship, cybersecurity, model evaluation, maintenance and recovery. Critical decisions must have a responsible human or institution, even when software prepares the assessment. Procurement should specify service levels, access to records, portability and tested exit arrangements. The purpose is practical: a firm or foreign user must be able to understand the service, correct an error and obtain assistance when the normal process fails.

Sixth, make evaluation influence funding and expansion. Each pilot should establish a baseline and monitor completion time, total user cost, rejection or

correction rates, and the share of users who continue using the service. Median completion time should be accompanied by a measure of long delays, because unpredictable exceptions can be especially costly. Payment pilots should also track the effective exchange-rate cost and refund performance; investment facilitation should follow project milestones; visitor services should measure successful completion and problem resolution. Aggregate indicators can then be supported by evidence from real processes.

An implementation sequence can make these priorities manageable. In the first twelve months, authorities and participating firms could map selected processes, confirm legal responsibilities and establish baseline data. During the following twelve to twenty-four months, they could test interoperability and user support in a limited number of sectors or partner corridors. Expansion should follow demonstrated improvements and independent review, with results published in an accessible form. These are proposed programme horizons, not official targets. Financing should cover continued operation as well as initial installation.

The economic rationale for this sequence is that public coordination is most valuable where fragmented incentives prevent a shared improvement. Common standards, cross-border recognition, trusted public information and support for smaller users can generate benefits across many transactions. Firm-specific applications should then build on those foundations. This division of work gives the state a clear role while leaving room for competing providers and business experimentation.

6. Conclusion

Viet Nam has made substantial progress in the digitalisation of border procedures. The 2015-2025 evidence shows a stronger paperless trade framework, with cross-border implementation catching up sharply after 2023. Payment connections and selected consular services provide examples of operational

change, while tourism policy sets out a wider integration agenda. The remaining challenge is to connect these advances into processes that firms and foreign users can complete reliably.

The article's main conclusion is that institutions, interoperable platforms and data, and organisational capability must develop together. Technology changes economic performance through specific mechanisms: reducing information and verification costs, making compliance more predictable, and improving coordination and payment. Where these connections remain incomplete, additional applications may yield limited benefits. Policy should therefore begin with the transaction and its unresolved constraints, then select the technology and governance arrangements that can address them.

The proposed priorities give practical content to the strategic technology agenda. They combine complete-process integration, international acceptance of records, sustained support for smaller firms, domestic value creation and measurable service performance. The study is limited by its reliance on secondary evidence and by the absence of linked transaction-level observations across agencies and firms. Future research should test the proposed mechanisms using processing records, user-cost surveys and carefully evaluated pilots. That work would help determine which improvements actually change the experience of doing business with Viet Nam and which deserve wider public investment.

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