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TRUST, CONSUMER RISK AND INSTITUTIONAL RELIABILITY IN E-COMMERCE DEVELOPMENT: EVIDENCE AND POLICY IMPLICATIONS FOR AZERBAIJAN

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Summary. *The expansion of digital payments has lowered one practical barrier to electronic commerce in Azerbaijan, but access to payment technology does not by itself create durable online-market participation. This article examines how consumer trust, perceived risk and institutional reliability shape the conversion of digital infrastructure into repeated e-commerce use. It combines a structured review with descriptive analysis of official card-payment data for 2021–2023, an UNCTAD global benchmark, and publicly observable business-model examples from Azerbaijan. Domestic card-based e-commerce operations rose from 110.1 million in 2021 to 563.4 million in 2023, while transaction value increased from AZN 7.50 billion to AZN 39.17 billion. Over the same period, cashless POS-terminal payments, used only as a proxy for in-person card commerce, increased from 105.1 million operations and AZN 3.93 billion to 416.6 million operations and AZN 9.79 billion. E-commerce value therefore grew faster and reached approximately four times the POS value by 2023; however, the comparison excludes cash and cannot represent total traditional trade. Across 43 economies covered by UNCTAD, business e-commerce sales increased from approximately US$21 trillion in 2020 to almost US$27 trillion in 2022. The Bravo and Birmarket examples illustrate how omnichannel stores, marketplaces, delivery, pickup and returns shift risk from physical inspection toward seller verification, fulfilment, data protection and redress. The results support a three-level framework linking consumer confidence, merchant capability and institutional safeguards. For Azerbaijan, payment modernization should be complemented by predictable dispute resolution, merchant verification, cybersecurity, reliable logistics and competition rules. The evidence describes market development and risk mechanisms; it does not identify causal effects or firm-level financial performance.*

Keywords: *e-commerce, consumer trust, perceived risk, digital payments, cybersecurity, institutional reliability, Azerbaijan.*

1. Introduction

E-commerce has become an important part of the wider digital transformation of markets, yet its development is often discussed as though technical access were the decisive constraint. That interpretation is incomplete. A consumer may have broadband access, a payment card and a usable online interface and still avoid a purchase because the seller is unknown, the delivery process is uncertain or the expected cost of obtaining a refund is too high. Merchants face a parallel problem: accepting electronic payments is only one element of an operating model that also requires secure data handling, inventory coordination, fulfilment, returns management and customer support. For this reason, the economic value of digital infrastructure depends on whether institutions and market practices can reduce the uncertainty surrounding remote exchange.

Measurement frameworks also warn that the digital economy cannot be reduced to a single technology or transaction indicator [1]. The issue is especially relevant in emerging economies. Rapid improvements in connectivity and payment infrastructure can occur faster than improvements in consumer protection, logistics, cybersecurity, platform governance and firm-level digital capability. Cross-country research generally associates digitalization with stronger economic performance, but the size of that relationship varies with institutions and complementary capabilities [2–4]. Recent evidence on digital payments likewise suggests benefits through formalization, financial inclusion and future growth, while also showing that payments should not be treated as an autonomous productivity shock [5]. Regional panel evidence also reports a positive association between e-commerce and growth, while leaving substantial room for country-specific institutional interpretation [6]. The practical question is therefore not whether digital transactions can expand, but whether the surrounding environment makes those transactions sufficiently reliable to become repeated economic behaviour.

Trust provides one of the bridges between infrastructure and use. The Technology Acceptance Model explains adoption through perceived usefulness and ease of use [7], whereas trust-based extensions show that online purchase intentions are also shaped by uncertainty about sellers, privacy, delivery and redress [8, 9]. The Unified Theory of Acceptance and Use of Technology adds social influence and facilitating conditions, which are particularly important where access to devices, payment acceptance, addressing systems or delivery networks is

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uneven [10]. Diffusion theory further suggests that relative advantage, compatibility, complexity and observability influence how quickly new transaction practices move from early adopters to routine use [11]. These models are foundational rather than recent, but their mechanisms remain relevant because the underlying asymmetry of remote exchange has not disappeared: the buyer usually pays before fully observing product quality and performance of the seller.

More recent digital-economy research broadens the problem beyond the individual purchase decision. Platforms can reduce search and matching costs, but they also concentrate data, bargaining power and rule-setting authority [12, 13]. Digital transformation can strengthen firm capabilities when software, analytics and organizational routines are integrated into business processes, yet the benefits are uneven when firms use digital channels only as an additional sales interface [14, 15]. UNCTAD [16] similarly emphasizes that the developmental value of data depends on who can create, control and monetize it. This means that a high volume of online transactions may coexist with dependence on foreign platforms, imported goods or externally controlled digital services.

Azerbaijan illustrates these tensions. The country has developed card infrastructure, digital banking and national payment systems while pursuing a broader strategy of economic diversification and private-sector development [17–19]. These developments lower the technical cost of remote settlement. At the same time, payment-based indicators do not capture all online orders, and transaction growth can reflect a shift from cash to cards, higher prices, imported consumption or a larger number of small payments rather than a proportional increase in domestic productivity. The institutional quality surrounding transactions is therefore essential for interpreting what observed e-commerce growth actually means.

The literature leaves a specific unresolved problem. Studies of adoption tend to focus on individual intention and trust, while macroeconomic studies focus on connectivity, ICT capital or transaction activity. Platform research highlights market power and data control, but it is not usually integrated with the practical risks of payment, delivery and redress in a country-specific framework. As a result, the path from digital infrastructure to repeated transaction use and then to domestic value creation is often fragmented across separate literatures. This fragmentation makes it difficult to identify which risks are merely technical, which are institutional, and which determine whether transaction growth is economically sustainable.

The aim of this research is to identify the mechanisms through which trust, perceived risk and institutional reliability influence e-commerce development in Azerbaijan and to formulate a practical framework for reducing transaction risk. The revised empirical component also documents recent domestic and international e-commerce trends and uses publicly observable Azerbaijani business examples to connect the conceptual framework to market practice.

To achieve this aim, five objectives were set: (1) to systematize the principal risk mechanisms affecting remote transactions and relate them to the stages of an e-commerce exchange; (2) to distinguish consumer-, merchant/platform- and institutional-level responsibilities; (3) to describe three-year trends in Azerbaijan's card-based e-commerce activity and compare them with cashless POS-terminal activity; (4) to place the domestic pattern in a global context and examine publicly observable business-model examples from Azerbaijan; and (5) to translate the findings into a practical risk-reduction framework and identify the evidence required for future causal and firm-level analysis.

2. Materials and Methods

The object of the study is the institutional and behavioural environment in which digitally ordered transactions are initiated, paid, fulfilled and resolved in Azerbaijan. The primary research hypothesis is that expansion of digital payment infrastructure has a stronger and more persistent effect on e-commerce participation when perceived transaction risk is reduced by reliable complementary institutions. In practical terms, the hypothesis implies that payment access and transaction security are necessary but insufficient conditions for repeated online purchasing.

Four assumptions define the analytical boundary. First, card-based e-commerce activity is treated as a payment-based proxy rather than as a complete measure of digitally ordered trade. The OECD [20] defines e-commerce by the method through which an order is placed, not by the payment method, so an online order paid in cash can qualify as e-commerce while a card payment at a physical shop does not. Second, the analysis distinguishes transaction participation from domestic value added. A purchase through a foreign platform can increase consumer convenience and local logistics activity while a substantial share of platform rents or product value is generated abroad. Third, consumer risk is treated as multidimensional rather than as a single probability of financial loss. Fourth, the study does not infer individual behaviour from aggregate payment statistics.

The work uses a structured narrative review combined with descriptive trend analysis and institutional interpretation. The source base was assembled for the underlying doctoral research on e-commerce and economic growth in Azerbaijan. Priority was given to peer-reviewed studies, official statistical and policy materials, and sources that clarify measurement boundaries. The empirical window is limited to three consecutive years for Azerbaijan (2021–2023) and three consecutive years for the international benchmark (2020–2022), reflecting the latest comparable annual observations available in the selected official sources.

Azerbaijan-specific interpretation relies on the Central Bank of the Republic of Azerbaijan's payment-system indicator workbook and Digital Payments Report 2023 [17, 25]. Four annual indicators were extracted: the number and value of domestic card-based e-commerce operations and the number and value of cashless POS-terminal payments. The former is treated as a payment-side proxy for e-commerce; the latter is used only as a narrow proxy for in-person card commerce and does not include cash. Global context is based on UNCTAD's aggregate business e-commerce sales estimates for 43 developed and developing economies [26]. Publicly observable service features reported by Bravo and Birmarket are used as illustrative cases rather than as firm-performance evidence [27, 28].

The analytical procedure contained four stages. First, risks were extracted from the literature and grouped by the stage of the transaction at which they become economically relevant: search and seller verification, payment and data exchange, delivery and fulfilment, redress and repeat use, and platform-mediated market access. Second, risks were assigned to consumer, merchant/platform and institutional levels. Third, annual counts and values were converted into comparable units; growth rates, average transaction values and e-commerce-to-POS ratios were calculated from the published aggregates. The average transaction value equals the annual transaction value divided by the annual transaction count. Fourth, the empirical trends and business examples were interpreted through the risk framework to identify mechanisms, limitations and policy implications. No causal model is estimated.

The principal simplification is that the framework does not estimate the probability or monetary size of each risk. Comparable micro-level loss data, chargeback data, delivery-failure data, complaint microdata and business-level online-sales data were not available in the supplied and cited public evidence. Aggregate payment indicators cannot identify unique consumers, repeat purchasers, merchant nationality, imports, inflation-adjusted output or trust. Likewise, publicly visible service features cannot establish a firm's sales performance or customer satisfaction. The practical cases are therefore analytical illustrations, and the international series is a contextual benchmark rather than a directly comparable national measure.

3. Results and Discussion

3.1. Risk mechanisms across the e-commerce transaction

The first objective was to systematize the sources of uncertainty surrounding remote exchange. The analysis identified five recurring risk mechanisms. The first is counterparty risk: the buyer cannot fully verify the seller, product quality or willingness to fulfil the order before payment. The second is payment and data risk, including unauthorized use of credentials, phishing, account takeover and misuse of personal information. The third is fulfilment risk, which appears when delivery is late, incomplete, damaged or inconsistent with the product description. The fourth is redress risk: even where a consumer has a legal right to refund or replacement, the practical time and effort required to exercise that right can be high. The fifth is platform and market-structure risk, which arises when access to customers, transaction data or ranking visibility depends on a small number of intermediaries.

These mechanisms operate sequentially but not independently. A platform may offer strong payment authentication while allowing weak merchant verification. A seller can deliver reliably yet use an opaque returns policy. A payment provider can reimburse fraudulent transactions while the consumer still loses time and confidence after a failed purchase. For this reason, trust is better interpreted as an expectation that the entire transaction chain will perform predictably than as confidence in one technological component.

This interpretation differs from a narrow technology-adoption view. Perceived usefulness and ease of use remain necessary because cumbersome authentication or complex checkout procedures can discourage completion [7]. Yet trust-based models show that convenience loses explanatory power when uncertainty regarding seller behaviour or redress is high [8, 9]. In emerging-market settings, the practical importance of this interaction is greater because formal and informal channels may coexist. Consumers can move between bank cards, cash on delivery, social-media sellers and foreign platforms according to which arrangement offers the most credible combination of price, convenience and protection.

Appendix Table A3 summarizes the transaction-stage interpretation. The comparison makes clear that the same visible outcome – an abandoned or non-repeated purchase – can originate from different mechanisms. This matters for policy because payment security cannot solve fulfilment failures, while delivery improvements cannot correct opaque seller identity or weak redress.

3.2. Interaction between consumer, merchant and institutional risk

The second objective was to distinguish risk according to the level at which it can be managed. The analysis produces a three-level structure. At the consumer level, perceived risk is shaped by previous experience, financial literacy, privacy expectations and the availability of alternative channels. At the merchant and platform level, risk depends on seller identification, cybersecurity, product information, fulfilment quality, complaint handling and the use of customer data. At the institutional level, the decisive factors are payment rules, consumer protection, competition policy, data governance, contract enforcement and the reliability of infrastructure such as addressing and delivery networks.

The levels interact through feedback. A well-designed legal right has little effect when enforcement is slow or costly. Conversely, a merchant may voluntarily provide strong refund guarantees because reputation is commercially valuable even when formal enforcement is weak. Platforms can standardize buyer protection and reduce search costs, but the same standardization can create dependence if sellers cannot retain customer relationships or move transaction histories to competing services. The institutional objective is therefore not to eliminate private governance but to ensure that private rules remain contestable and compatible with consumer rights.

Cybersecurity is a useful example of shared responsibility. Direct losses from phishing or account takeover can be borne by consumers, merchants, banks or payment networks depending on the circumstances. Reputational losses, however, spread across the channel. After a failed payment, consumers may not distinguish accurately between the merchant, bank, card scheme and platform. A weakness in one component can therefore lower confidence in the whole system. Security investment has a systemic quality: common authentication practices, rapid incident reporting and fraud-information exchange can create benefits beyond the organization that pays for them.

Privacy creates a different trade-off. Transaction data can improve fraud detection, credit assessment, demand forecasting and inventory management. These applications support the productive use of digitalization described by endogenous-growth and digital-transformation research [14, 15, 21]. The same data can also support intrusive monitoring, discriminatory pricing or unauthorized third-party use. The economically relevant objective is predictable governance. A regime that is too permissive can undermine long-run confidence, while an unnecessarily restrictive regime can raise compliance costs and prevent useful analytics, especially for small firms.

Compared with studies that treat adoption as a binary decision, the three-level structure explains why usage can be intermittent. A consumer may trust a particular bank but not a social-media seller; trust a marketplace but not its delivery partner; or trust a merchant but avoid storing payment credentials. The resulting behaviour is not inconsistent. It reflects a transaction chain in which confidence is only as strong as the stage perceived to be least reliable.

3.3. Empirical trends in Azerbaijan and global context

The third objective was to assess how the identified mechanisms apply to Azerbaijan using a three-year empirical window. Appendix Table A1 reports Central Bank data for 2021–2023 [17, 25]. The number of domestic card-based e-commerce operations increased from 110.1 million in 2021 to 261.0 million in 2022 and 563.4 million in 2023. Their nominal value rose from AZN 7.50 billion to AZN 18.52 billion and then to AZN 39.17 billion. Between 2021 and 2023, the recorded number of operations grew by 411.8 per cent and their value by 422.2 per cent.

The average recorded e-commerce transaction was AZN 68.13 in 2021, AZN 70.94 in 2022 and AZN 69.52 in 2023. Its relative stability, alongside rapid growth in transaction counts, indicates that the increase in nominal value was not produced solely by a rising average ticket. Nevertheless, the aggregate series cannot separate price effects, unique buyers, repeated use, domestic and foreign merchants, or the share of imported goods. It therefore documents market activity rather than real output or a causal improvement in trust.

A cautious comparison with cashless POS-terminal payments provides a narrow view of online versus in-person card activity. POS transactions rose from 105.1 million operations and AZN 3.93 billion in 2021 to 416.6 million operations and AZN 9.79 billion in 2023. The ratio of e-commerce to POS value increased from 1.91 to 3.19 and 4.00 across the three years, while the transaction-count ratio rose from 1.05 to 1.31 and 1.35. The faster expansion of

the e-commerce series is consistent with stronger use of remote payment channels. It is not a comparison with total traditional trade, because cash purchases and other non-card transactions are excluded from the POS proxy.

The POS average transaction value fell from AZN 37.39 in 2021 to AZN 29.17 in 2022 and AZN 23.50 in 2023. One plausible interpretation is that cashless cards were increasingly used for smaller everyday in-person purchases; however, the published aggregates do not identify product categories or customer behaviour, so this mechanism cannot be established directly. Similarly, the e-commerce count increase may be consistent with broader or more frequent use, but it does not by itself measure consumer confidence, fraud, delivery quality or refund outcomes.

The global benchmark in Appendix Table A2 shows that business e-commerce sales across 43 economies representing around three quarters of global GDP were approximately US$21 trillion in 2020, almost US$25 trillion in 2021 and an estimated US$27 trillion in 2022 [26]. UNCTAD regards the 2022 value as indicative because estimates account for a substantial share of the total. The direction of Azerbaijan's payment-based series is consistent with the broader international expansion of online business activity, but the magnitudes must not be compared directly: the Azerbaijan series records card operations, while the UNCTAD series measures business sales and includes both business-to-business and business-to-consumer transactions.

The empirical evidence refines rather than replaces the risk framework. Rapid payment growth confirms that access and transaction capability are expanding, while the limits of the series reveal the need for consumer-, merchant- and fulfilment-level indicators. Evaluation should therefore combine payment activity with the number of active online buyers and merchants, repeat-purchase rates, failed-payment rates, on-time delivery, cancellations, returns, complaints and resolution time. Without these measures, high transaction growth can coexist with unresolved institutional and service-quality risks.

3.4. Illustrative Azerbaijani business cases

The fourth objective was to connect the risk mechanisms to practical market arrangements without attributing unpublished results to individual firms. Bravo and Birmarket were selected because their official public channels make different transaction structures visible: an omnichannel supermarket model and a multi-category online marketplace. The cases use only public service information and do not claim access to sales, profitability, customer-satisfaction or complaint microdata (Appendix Table A5).

Bravo reports a network of 144 stores across 11 regions, more than 50,000 products, and online ordering through Bravo Online and Wolt [28]. The physical-store channel reduces some pre-purchase uncertainty by allowing direct product inspection and immediate collection. The online channel can reduce travel and search costs and extend access, but it adds risks associated with order accuracy, substitutions, delivery timing, payment-data processing and refunds. The omnichannel structure can reduce these risks when store presence, recognizable identity and accessible redress support the remote transaction; the available public information does not show how often this occurs or its financial effect.

Birmarket presents a marketplace model with more than 500,000 products, two-hour express delivery, over 900 pickup points, installment or credit options, and published return and support pathways [27]. Product aggregation and pickup options can lower search and last-mile uncertainty, while delivery and financing features can make remote purchasing more convenient. At the same time, a marketplace increases the importance of seller verification, consistent product information, transparent financing terms, delivery standards, data governance and coordinated returns because the platform mediates relationships among buyers, sellers, payment providers and logistics services.

Together, the cases show that e-commerce does not eliminate commercial risk; it redistributes risk across channels and institutions. A useful business-level assessment would compare the online share of orders, repeat-purchase rates, on-time delivery, cancellation and return rates, complaint frequency, resolution time and refund completion with equivalent in-store indicators. Those figures were not available in the cited public sources and are therefore identified as future evidence requirements rather than generated or inferred in this study.

3.5. Practical risk-reduction framework and research implications

The fifth objective was to translate the mechanisms into a practical framework. The resulting approach is based on the sequence trust – repeat use – merchant investment – domestic value capture. The sequence is deliberately conditional: infrastructure can enable transactions, but the persistence and local economic contribution of those transactions depend on the reliability of the wider exchange environment.

The framework therefore prioritizes five areas. First, merchant verification should make

seller identity and responsibility visible before the purchase. Second, payment security should combine strong authentication with understandable communication, because technically secure processes can still reduce conversion when users perceive them as confusing or suspicious. Third, logistics standards should improve tracking, delivery reliability and accountability for failed fulfilment. Fourth, dispute and refund procedures should minimize the practical cost of correcting a failed transaction. Fifth, platform and data rules should preserve contestability and the ability of domestic firms to retain useful customer and transaction capabilities.

Appendix Table A4 compares these priorities with the common but narrower approach of evaluating digital commerce primarily through access or transaction-volume indicators. The advantage of the proposed framework is not that it replaces measurement of infrastructure and activity, but that it specifies the additional evidence required to interpret those measures.

The framework also clarifies the limits of the present study. First, it is based on secondary aggregate and institutional evidence; it does not estimate individual willingness to pay for protection or the probability of fraud, delivery failure or refund denial. Second, risk perceptions can vary by age, income, region, product category and prior experience, none of which are observed in aggregate card statistics. Third, the same institutional reform may have different effects on consumers and merchants. Stronger compliance can raise confidence but also increase fixed costs for small sellers. Fourth, cross-border platforms complicate national interpretation because consumer welfare, domestic employment and platform rents can move in different directions.

These limitations point directly to further research. Household surveys could measure perceived risk by transaction stage rather than by a single trust scale. Merchant surveys could document the cost of payment integration, fraud prevention, returns and platform commissions. Administrative data on chargebacks, complaints and delivery outcomes could support quantitative risk models. With longer time series, researchers could test whether improvements in consumer protection or payment security are followed by changes in repeat transaction counts rather than merely higher nominal value. Such extensions would move the framework from mechanism identification toward causal evaluation.

4. Conclusions

1. The study systematized e-commerce uncertainty into five transaction-stage mechanisms: counterparty risk, payment/data risk, fulfilment risk, redress risk and platform/market-structure risk. The comparative result is important because these risks can produce the same visible outcome – abandonment or non-repetition – while requiring different remedies. A payment-focused intervention therefore cannot be assumed to solve delivery, redress or platform-governance problems.

2. The analysis distinguished three interacting levels of risk management: consumer, merchant/platform and institutional. The distinctive result is that trust is not located in one actor. It is an expectation regarding the performance of the transaction chain. This explains why technically secure payment infrastructure can coexist with limited or intermittent e-commerce use when seller verification, logistics or dispute resolution remain uncertain.

3. For Azerbaijan, official data show substantial expansion in domestic card-based e-commerce activity: transaction counts increased from 110.1 million in 2021 to 563.4 million in 2023 and nominal value from AZN 7.50 billion to AZN 39.17 billion. Over the same period, cashless POS value rose from AZN 3.93 billion to AZN 9.79 billion, causing the e-commerce-to-POS value ratio to rise from 1.91 to 4.00. The result indicates faster growth in remote card activity, not the displacement of total traditional trade, because cash is outside the POS comparison and aggregate payment data do not identify real output, consumer trust or domestic value added.

4. The global benchmark and the Bravo and Birmarket cases support a practical risk-reduction sequence around merchant verification, understandable payment security, reliable fulfilment, predictable redress and contestable platform/data governance. The business examples illustrate how online and omnichannel models can reduce search and access costs while creating new verification, delivery and refund risks. Their public service features are not evidence of firm performance; future evaluation requires merchant- and consumer-level indicators, including repeat purchases, delivery reliability, returns, complaints and resolution time.

Conflict of Interest

The author declares that there is no conflict of interest regarding this study, including any financial, personal, authorship or other conflicts that could influence the study and its results as presented in this article.

Financing

The study was conducted without financial support.

Data Availability

The manuscript has no associated primary or micro-level dataset. Appendix Tables A1 and A2 reproduce rounded descriptive indicators derived from publicly available Central Bank of the Republic of Azerbaijan and UNCTAD sources cited in references [17, 25, 26]. Appendix Table A5 uses only publicly observable service information from the cited company websites [27, 28]. The underlying official sources are accessible through the URLs in the reference list.

Use of Artificial Intelligence Tools

OpenAI GPT-5.6 Sol was used during manuscript preparation to assist with drafting, language editing and organization of material derived from the author's doctoral research notes and cited sources. It was not used to create, alter or simulate empirical data, statistical results or bibliographic records. The author reviewed the manuscript against the underlying sources, corrected the text where necessary and retains full responsibility for the arguments and conclusions. The tool did not independently determine the research findings.

Author Contributions

Nijat Ahmadli: conceptualization, literature review, methodology, investigation, interpretation, writing – original draft, writing – review and editing.

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Appendix A. Supporting tables

Table A1

Azerbaijan: card-based e-commerce and cashless POS-terminal activity, 2021–2023

Year	E-commerce operations (million)	E-commerce value (AZN billion)	POS operations (million)	POS value (AZN billion)	E-commerce / POS value ratio	Average ticket: e-commerce / POS (AZN)
2021	110.095	7.501	105.143	3.931	1.91	68.13 / 37.39
2022	261.003	18.516	199.137	5.808	3.19	70.94 / 29.17
2023	563.443	39.171	416.558	9.787	4.00	69.52 / 23.50
2021–2023 change	+411.8%	+422.2%	+296.2%	+149.0%	–	–

Source: author's calculations from the Central Bank of the Republic of Azerbaijan [17, 25]. Notes: values are nominal and rounded. E-commerce is a card-payment proxy. Cashless POS-terminal activity is a narrow proxy for in-person card commerce and excludes cash; it is not total traditional trade. Average ticket = value / transaction count.

Table A2

Global business e-commerce sales benchmark, 2020–2022

Year	Business e-commerce sales (US$ trillion)	Measurement note
2020	Approximately 21	Rounded reading of UNCTAD Figure 1
2021	Almost 25	43 economies; approximately three quarters of global GDP
2022	Approximately 27	Indicative estimate; estimates account for about one third of the total

Source: UNCTAD [26]. Notes: the series covers 43 developed and developing economies and is not a full-world census. It measures business e-commerce sales, including business-to-business and business-to-consumer transactions. The 2022 value should be regarded as indicative.

Table A3

Risk mechanisms across the e-commerce transaction

Transaction stage	Dominant risk	Immediate economic effect	Main risk-reduction mechanism
Search / seller selection	Seller identity, product-quality uncertainty	Higher search cost; purchase abandonment	Merchant verification; reputation systems; clear product information
Payment / data exchange	Fraud, phishing, account takeover, privacy misuse	Expected financial loss; reluctance to prepay	Authentication; fraud monitoring; predictable liability rules
Delivery / fulfilment	Delay, non-delivery, damaged or mismatched goods	Lower willingness to buy remotely; higher returns	Tracking; service standards; reliable last-mile logistics
Redress / repeat use	Refund friction, weak complaint handling	Lower repeat purchase; return to cash or informal channels	Standardized complaints; enforceable refund and dispute procedures
Platform / market access	Data concentration, ranking dependence, commissions	Merchant dependence; weaker domestic value capture	Competition, interoperability, data portability and merchant capability

Source: author synthesis based on [7–9, 12, 13, 16, 20].

Table A4

From digital access to reliable e-commerce participation

Observed indicator	What it can show	What it cannot show alone	Additional evidence needed
More payment cards / accounts	Technical access to formal payment instruments	Active e-commerce use or trust	Active use, merchant acceptance, failed-payment experience
Higher card e-commerce value	Larger recorded monetary activity	Real output, domestic value added, lower risk	Price effects, product origin, merchant margins, import share
Higher transaction count	Broader or more frequent recorded use	Economic size of purchases or consumer welfare	Repeat buyers, merchant participation, average transaction size
More platform activity	Lower search costs and wider market access	Domestic control of data and rents	Seller concentration, platform fees, data portability, local service value
More internet access	Larger potential user base	Completed transactions or reliable fulfilment	Online purchasing, delivery quality, digital skills, complaint outcomes

Source: author synthesis based on [16, 17, 20, 23] and the conceptual analysis in this study.

Table A5

Illustrative Azerbaijani business cases and evidence boundaries

Business model	Publicly observable channel features	Risk and trust interpretation	Evidence boundary
Bravo: omnichannel supermarket	144 stores in 11 regions; 50,000+ products; online ordering through Bravo Online and Wolt	Store identity and physical presence can support verification and redress; online ordering lowers search and travel costs but adds substitution, delivery and refund risks	No public firm-level online sales, repeat-use, delivery, return, complaint or profitability data used
Birmarket: online marketplace	500,000+ products; two-hour express delivery; 900+ pickup points; installment/credit and return/support pathways	Aggregation and pickup can reduce search and last-mile uncertainty; platform mediation increases the importance of seller verification, financing transparency, data governance and coordinated returns	Public service features illustrate mechanisms only; they do not establish financial performance or customer outcomes

Source: public information on the official Birmarket and Bravo websites [27, 28], accessed September 16, 2026.