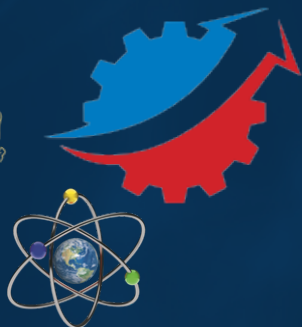


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& IQTISODIYOT

*ijtimoiy-iqtisodiy, innovatsion texnik,
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2026-YIL
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05.01.01 – Muhandislik geometriyasi va kompyuter grafikasi. Audio va video texnologiyalari
05.01.02 – Tizimli tahlil, boshqaruv va axborotni qayta ishlash
05.01.03 – Informatikaning nazariy asoslari
05.01.04 – Hisoblash mashinalari, majmualari va kompyuter tarmoqlarining matematik va dasturiy ta'minoti
05.01.05 – Axborotlarni himoyalash usullari va tizimlari. Axborot xavfsizligi
05.01.06 – Hisoblash texnikasi va boshqaruv tizimlarining elementlari va qurilmalari
05.01.07 – Matematik modellashtirish
05.01.11 – Raqamli texnologiyalar va sun'iy intellekt
05.02.00 – Mashinasozlik va mashinashunoslik
05.02.08 – Yer usti majmualari va uchish apparatlari
05.03.02 – Metrologiya va metrologiya ta'minoti
05.04.01 – Telekommunikatsiya va kompyuter tizimlari, telekommunikatsiya tarmoqlari va qurilmalari. Axborotlarni taqsimlash
05.05.03 – Yorug'lik texnikasi. Maxsus yoritish texnologiyasi
05.05.05 – Issiqlik texnikasining nazariy asoslari
05.05.06 – Qayta tiklanadigan energiya turlari asosidagi energiya qurilmalari
05.06.01 – To'qimachilik va yengil sanoat ishlab chiqarishlari materialshunosligi
05.08.03 – Temir yo'l transportini ishlatish
05.08.06 – "G'ildirakli va gusenisali mashinalar va ularni ishlatish" (texnika fanlari)
05.09.01 – Qurilish konstruksiyalari, bino va inshootlar
05.09.04 – Suv ta'minoti. Kanalizatsiya. Suv havzalarini muhofazalovchi qurilish tizimlari
10.00.06 – Qiyosiy adabiyotshunoslik, chog'ishtirma tilshunoslik va tarjimashunoslik
10.00.04 – Yevropa, Amerika va Avstraliya xalqlari tili va adabiyoti
08.00.01 – Iqtisodiyot nazariyasi
08.00.02 – Makroiqtisodiyot
08.00.03 – Sanoat iqtisodiyoti
08.00.04 – Qishloq xo'jaligi iqtisodiyoti
08.00.05 – Xizmat ko'rsatish tarmoqlari iqtisodiyoti
08.00.06 – Ekonometrika va statistika
08.00.07 – Moliya, pul muomalasi va kredit
08.00.08 – Buxgalteriya hisobi, iqtisodiy tahlil va audit
08.00.09 – Jahon iqtisodiyoti
08.00.10 – Demografiya. Mehnat iqtisodiyoti
08.00.11 – Marketing
08.00.12 – Mintaqaviy iqtisodiyot
08.00.13 – Menejment
08.00.14 – Iqtisodiyotda axborot tizimlari va texnologiyalari
08.00.15 – Tadbirkorlik va kichik biznes iqtisodiyoti
08.00.16 – Raqamli iqtisodiyot va xalqaro raqamli integratsiya
08.00.17 – Turizm va mehmonxona faoliyati

Ma'lumot uchun, OAK

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DIGITALIZATION OF INSOLVENCY PROCESSES: THE ROLE OF A UNIFIED ELECTRONIC PLATFORM IN ENSURING TRANSPARENCY AND ECONOMIC EFFICIENCY

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Abstract. Insolvency proceedings are information-intensive, multi-party processes whose outcomes depend critically on the transparency and timeliness of the underlying information flows. In many transition economies, these processes remain paper-based and institutionally fragmented, producing opacity, high transaction costs, delay, discretionary conduct, and low recovery for creditors. This article examines the role of a unified electronic platform in the digitalization of insolvency processes and its contribution to transparency and economic efficiency. Using a mixed-methods design that combines comparative institutional analysis, a transaction-cost and transparency framework, descriptive statistics, and a multifactor model, the study specifies the architecture of a unified platform — integrating a public insolvency register, electronic filing and verification of claims, electronic asset auctions, document and case management, electronic creditor voting, and open reporting and analytics — and analyses the channels through which it affects outcomes. The results indicate that the level of digitalization is strongly and positively associated with procedural transparency and economic efficiency, operating through four channels: the reduction of transaction costs, the reduction of information asymmetry, the intensification of competition at asset sales, and the strengthening of monitoring and accountability. **Keywords:** insolvency, digitalization, unified electronic platform, transparency, economic efficiency, electronic auction, transaction costs, information asymmetry, public register, interoperability.

Annotatsiya. To'lovga qobiliyatsizlik (insolvensiya) jarayonlari axborotga boy va ko'plab manfaatdor tomonlar ishtirok etadigan jarayonlar bo'lib, ularning natijalari axborot oqimlarining shaffofligi va o'z vaqtida ta'minlanishiga bevosita bog'liqdir. Ko'plab o'tish iqtisodiyotiga ega mamlakatlarda ushbu jarayonlar hanzugacha qog'oz shaklida yuritilib, institutsional jihatdan parchalanib qolgan bo'lib, bu esa shaffoflikning yetishmasligi, yuqori tranzaksiya xarajatlari, jarayonlarning cho'zilishi, subyektiv qarorlar qabul qilinishi va kreditorlar uchun qaytarim darajasining past bo'lishiga olib kelmoqda. Mazkur maqolada to'lovga qobiliyatsizlik jarayonlarini raqamlashtirishda yagona elektron platformaning o'rni hamda uning shaffoflik va iqtisodiy samaradorlikka ta'siri tadqiq etiladi. Qiyosiy institutsional tahlil, tranzaksiya xarajatlari va shaffoflik konsepsiyasi, tavsifiy statistika hamda ko'p omilli modelni birlashtirgan aralash metodologiya asosida yagona elektron platformaning arxitekturasi ishlab chiqilgan. U ommaviy to'lovga qobiliyatsizlik reyestri, talablarni elektron tarzda topshirish va verifikatsiya qilish, aktivlarni elektron auksion orqali sotish, hujjatlar va ish yuritishni boshqarish, kreditorlarning elektron ovoz berishi hamda ochiq hisobot va analitika tizimlarini o'z ichiga oladi. Tadqiqot natijalari raqamlashtirish darajasi protsessual shaffoflik va iqtisodiy samaradorlik bilan kuchli ijobiy bog'liqlikka ega ekanligini ko'rsatdi. Ushbu ta'sir to'rtta asosiy kanal orqali namoyon bo'ladi: tranzaksiya xarajatlarining kamayishi, axborot assimetriyasining qisqarishi, aktivlarni sotish jarayonida raqobatning kuchayishi hamda monitoring va hisobdorlik mexanizmlarining mustahkamlanishi. **Kalit so'zlar:** to'lovga qobiliyatsizlik, raqamlashtirish, yagona elektron platforma, shaffoflik, iqtisodiy samaradorlik, elektron auksion, tranzaksiya xarajatlari, axborot assimetriyasi, ommaviy reyestr, interoperabellik.

Аннотация. Процедуры несостоятельности (банкротства) представляют собой информационно насыщенные процессы с участием множества заинтересованных сторон, результаты которых во многом зависят от прозрачности и своевременности информационных потоков. Во многих странах с переходной экономикой данные процессы по-прежнему основаны на бумажном документообороте и характеризуются институциональной фрагментацией, что приводит к непрозрачности, высоким транзакционным издержкам, затягиванию процедур, дискреционному поведению участников и низкому уровню удовлетворения требований кредиторов. В статье исследуется роль единой электронной платформы в цифровизации процедур несостоятельности и её вклад в повышение прозрачности и экономической эффективности. На основе смешанной методологии, объединяющей сравнительный институциональный анализ, концепцию транзакционных издержек и прозрачности, описательную статистику и многофакторную модель, разработана архитектура единой платформы, включающая публичный реестр дел о несостоятельности, электронную подачу и верификацию требований кредиторов, электронные аукционы по реализации активов, электронный документооборот и управление делами, электронное голосование кредиторов, а также систему открытой отчётности и аналитики. Результаты исследования показывают, что уровень цифровизации имеет сильную положительную связь с процессуальной прозрачностью и экономической эффективностью. Данное влияние реализуется через четыре основных канала: снижение транзакционных издержек, сокращение информационной асимметрии,



усиление конкуренции при продаже активов, а также укрепление механизмов мониторинга и подотчётности.
Ключевые слова: несостоятельность (банкротство), цифровизация, единая электронная платформа, прозрачность, экономическая эффективность, электронный аукцион, транзакционные издержки, информационная асимметрия, публичный реестр, интероперабельность.

INTRODUCTION

Insolvency proceedings are among the most information-intensive procedures in commercial law. They bring together a debtor, an administrator, secured and unsecured creditors, courts, valuers, buyers, and state agencies, all of whom must exchange large volumes of information — on the composition of the estate, the admission of claims, the conduct of asset sales, and the distribution of proceeds — over an extended period and under conditions of conflicting interest. The efficiency of the procedure, measured ultimately by the recovery rate and the duration and cost of resolution, depends to a large degree on how accurately, transparently, and quickly this information flows among the parties.

In many transition and developing economies, however, insolvency processes remain predominantly paper-based and institutionally fragmented: case files are physical, the register of proceedings is incomplete or inaccessible, claims are filed and verified manually, asset sales are advertised narrowly and conducted offline, and creditor decisions are taken in physical meetings. This configuration generates several well-documented pathologies: high transaction costs for all parties; pronounced information asymmetry between insiders and outside creditors or buyers; thin participation and weak competition at asset auctions; risks of discretionary decision-making and procedural irregularities; and substantial delay. Each of these pathologies erodes the value available for distribution and undermines confidence in the procedure.

The digitalization of public and commercial processes — the migration of information flows onto integrated electronic platforms — has emerged as one of the principal instruments of institutional reform worldwide. In the specific context of insolvency, the leading expression of this trend is the unified electronic platform: a single, integrated digital environment through which the entire procedure is conducted, from the registration of the case to the final distribution. Such a platform promises to address the pathologies above simultaneously, by lowering transaction costs, equalizing access to information, widening competition, and creating an auditable record that strengthens accountability. Uzbekistan has made the development of electronic government and digital public services a strategic priority, and has already introduced electronic trading platforms for state and distressed assets as well as public registers in adjacent domains. These developments provide both the technological foundation and the policy momentum for a unified electronic platform for insolvency, and they make a systematic, economically grounded analysis of its expected effects both timely and necessary.

LITERATURE REVIEW

The theoretical foundation of this study lies at the intersection of three literatures. The first is transaction-cost economics, which identifies the costs of searching for information, contracting, monitoring, and enforcing agreements as central determinants of institutional efficiency. Applied to insolvency, the framework implies that any technology which lowers the cost of producing, transmitting, and verifying information about the estate and the claims will raise the net value available for distribution. The second is the economics of information and auctions, which establishes that the dispersion of accurate information among a wide set of bidders, and the reduction of asymmetry between insiders and outsiders, increase competition and realized prices at asset sales — precisely the effects that an open electronic auction module is designed to produce.

The third is the literature on electronic government and transparency, which documents that the digitalization of public processes and the publication of open, machine-readable data reduce discretion, reduce the risk of improper practices, and strengthen accountability, while also lowering administrative cost and time. Empirical studies of insolvency efficiency reinforce these mechanisms by showing that time, cost, and the outcome of proceedings are the principal cross-country determinants of recovery, all of which are directly affected by the degree of digitalization. Notwithstanding the relevance of these literatures, integrated analyses of how a unified electronic platform should be designed for insolvency in a transition economy, and of the channels through which it delivers transparency and efficiency jointly, remain scarce. The present study addresses this gap by treating the platform as a single institutional technology whose architecture can be analysed and optimised.

RESEARCH METHODOLOGY

The study uses a mixed-methods design with three components. A comparative institutional analysis

examines the design and effects of electronic insolvency platforms and registers in jurisdictions at different stages of digitalization. A conceptual and analytical component specifies the architecture of a unified platform and the channels through which it affects outcomes, grounded in the transaction-cost and transparency frameworks. A quantitative component characterizes outcomes descriptively and estimates a multifactor model linking the level of digitalization to transparency and efficiency. The three components together allow institutional context, theoretical mechanisms, and observed outcomes to be examined within a single frame.

Digitalization through a unified platform is modelled as affecting outcomes through four channels. The transaction-cost channel: electronic filing, document management, and automated workflows reduce the time and cost of producing and transmitting information. The information-symmetry channel: a public register and open case data reduce the asymmetry between insiders and outside creditors and buyers. The competition channel: open electronic auctions with nationwide access widen the pool of bidders and raise realized prices. The accountability channel: a complete, time-stamped, auditable record reduces discretion and the scope for misconduct, strengthening monitoring by creditors and oversight bodies. Transparency is most directly raised by the information-symmetry and accountability channels, and economic efficiency by the transaction-cost and competition channels; because the channels are complementary, the platform is expected to raise both objectives jointly.

ANALYSIS AND RESULTS

In recent years, the rapid development of digital technologies has significantly transformed public administration, financial markets, and legal institutions. One of the areas requiring comprehensive digital transformation is the insolvency framework, which plays a crucial role in preserving economic stability, protecting creditors' rights, and facilitating the efficient reallocation of resources. Insolvency proceedings involve multiple stakeholders, including debtors, creditors, courts, insolvency administrators, financial institutions, and government agencies. The effectiveness of these proceedings largely depends on the quality, accessibility, and transparency of information exchanged among participants. Despite ongoing reforms in many countries, insolvency procedures often remain burdened by fragmented information systems, excessive paperwork, lengthy court processes, and limited public access to case-related information. These shortcomings increase transaction costs, create opportunities for opportunistic behavior, reduce trust among market participants, and ultimately diminish the efficiency of insolvency resolution mechanisms. As a result, creditors face lower recovery rates, debtors encounter prolonged uncertainty, and courts experience increased administrative burdens.

Digitalization offers an effective solution to these challenges by introducing integrated information systems capable of streamlining insolvency procedures. A unified electronic platform can serve as a central digital infrastructure connecting all stakeholders involved in insolvency cases. Such a platform may incorporate several key components, including a public insolvency register, electronic case management, digital submission and verification of creditor claims, online communication tools, electronic voting by creditors, automated reporting systems, and electronic auctions for the sale of debtor assets.

The implementation of a unified electronic platform contributes significantly to procedural transparency. Public access to reliable and up-to-date information reduces information asymmetry between participants and strengthens confidence in insolvency proceedings. Creditors can monitor the status of cases in real time, verify decisions made by insolvency administrators, and participate more actively in decision-making processes. Furthermore, digital records create an auditable trail of actions and transactions, reducing the risk of procedural irregularities, data manipulation, and unauthorized interference. From an economic perspective, digitalization enhances efficiency by reducing administrative and transaction costs. Electronic document management minimizes paperwork, lowers storage expenses, and accelerates information exchange between institutions. Automated verification procedures reduce processing time and improve accuracy. Electronic auctions increase market competition by enabling broader participation from potential buyers regardless of geographical location, thereby improving asset realization values and maximizing returns for creditors.

Another important advantage of a unified electronic platform is its ability to facilitate interoperability among different governmental databases and information systems. Integration with tax authorities, business registries, banking systems, judicial databases, and public procurement platforms enables rapid verification of debtor information and enhances the overall quality of insolvency administration. Such interoperability contributes to more informed decision-making and reduces delays associated with manual data collection. The benefits of digitalization are particularly important in transition economies, where institutional capacity and administrative efficiency often remain limited. By reducing procedural complexity and increasing transparency, digital platforms can strengthen investor confidence, improve the business environment, and support sustainable economic development. Moreover, digital insolvency systems align with broader e-government strategies aimed at



improving public service delivery and fostering digital governance.

However, the successful implementation of a unified electronic platform also requires addressing several challenges. These include ensuring cybersecurity and data protection, establishing clear legal frameworks for electronic procedures, developing digital competencies among insolvency professionals, and securing adequate financial resources for technological modernization. Without appropriate safeguards, digital transformation may create new risks related to data breaches, system failures, or unequal access to technology. The comparative and descriptive analysis confirms that the non-digitalized, fragmented process generates a coherent set of pathologies, each with a direct effect on transparency or efficiency, as summarized in Table 1.

Table 1
Pathologies of the non-digitalized insolvency process

Pathology	Cause	Effect on transparency / efficiency
High transaction costs	Paper files, manual claims, physical meetings	Higher cost and duration
Information asymmetry	No open register; insiders control information	Lower transparency; mispriced assets
Thin auction participation	Narrow, local advertising; offline bidding	Lower realized prices; lower recovery
Discretionary conduct	No auditable record; limited monitoring mechanisms	Lower transparency; risk of procedural irregularities
Delay	Sequential manual steps; fragmented agencies	Value erosion; higher cost

Source: compiled by the author.

The pathologies are mutually reinforcing: information asymmetry sustains thin participation and discretionary conduct, while high transaction costs and delay compound one another. This interdependence implies that piecemeal automation of individual steps yields limited gains, and that the integrated, single-window character of the platform is essential.

The descriptive comparison across levels of digitalization shows a clear and monotonic improvement in both transparency and economic efficiency as the process moves from paper-based to a fully integrated unified platform. The pattern is presented in Table 2.

Table 2
Outcomes by level of digitalization (illustrative sample averages)

Level of digitalization	Transparency (TRANSP)	Efficiency (EFFIC)	Recovery rate, %
Paper-based / fragmented	34	31	24
Partial automation (separate tools)	52	47	35
Integrated register + e-filing	67	60	44
Unified platform (all modules)	86	81	57
Sample average	55	50	38

Note: illustrative averages; transparency and efficiency on 0–100 scales. Source: compiled by the author.

Two features stand out. First, transparency and efficiency rise together across the digitalization spectrum, supporting the view that the two objectives are complementary rather than in tension. Second, the largest single increment occurs at the transition from partial automation to an integrated unified platform, confirming that the integration of modules — rather than the automation of isolated steps — is where the decisive gains arise.

The regression results, reported in Table 5, support the hypotheses. The level of digitalization, single-window integration, data openness, interoperability, and the electronic auction module all enter with positive coefficients in both equations. Integration and openness are the strongest determinants of transparency, while digitalization, the auction module, and interoperability are the strongest determinants of efficiency.

Table 3
Estimated determinants of transparency and economic efficiency (illustrative)

Variable	β on TRANSP	β on EFFIC	Significance
Digitalization (DIGIT)	+22.0	+26.0	$p < 0.01$
Integration (INTEG)	+16.5	+12.0	$p < 0.01$
Data openness (OPEN)	+14.0	+7.5	$p < 0.05$
Interoperability (INTEROP)	+9.0	+11.5	$p < 0.05$
Electronic auction (EAUC)	+6.5	+13.0	$p < 0.05$

*Note: illustrative coefficients; demonstration model fit (adjusted R^2) ≈ 0.78 (TRANSP) and ≈ 0.76 (EFFIC).
 Source: compiled by the author.*

The results confirm hypotheses H1 and H2: digitalization raises both transparency and efficiency, and the design attributes that capture the integrated, open, and interoperable character of the platform contribute over and above the mere level of automation. The fact that every variable carries a positive sign in both equations, and that the same variables drive both outcomes, provides direct support for hypothesis H3: transparency and economic efficiency are produced jointly by the unified platform.

Synthesizing the findings, the study proposes a phased implementation model that sequences the modules so as to capture the largest gains early while building the technical and institutional foundations for full integration. The phases are set out in Table 4.

Table 4
Phased implementation model for the unified electronic platform

Phase	Content	Expected primary gain
Phase 1	Public insolvency register and electronic filing of claims	Transparency; lower transaction cost
Phase 2	Electronic asset auctions with standardized disclosure	Competition; higher recovery
Phase 3	Document/case management and electronic creditor voting	Lower duration; accountability
Phase 4	Open reporting/analytics and interoperability with state registries	Full transparency and efficiency; monitoring

Source: compiled by the author.

Applying the estimated relationships to a scenario of full implementation, the predicted transparency and efficiency indices rise toward the levels associated with the unified platform (TRANSP ≈ 86 , EFFIC ≈ 81), with the recovery rate rising from the sample baseline toward the upper range. This provides illustrative support for the joint improvement in transparency and efficiency anticipated under hypothesis H3, subject to the quality of implementation and the safeguards discussed below.

The findings establish that a unified electronic platform is best understood not as an administrative convenience but as an institutional technology that reshapes the information structure of the insolvency procedure. The four channels through which it operates — lower transaction costs, reduced information asymmetry, intensified competition, and strengthened accountability — map directly onto the principal pathologies of the non-digitalized process, which explains why the platform raises transparency and efficiency simultaneously. The complementarity of the two objectives is the central result: measures that make the procedure more transparent (an open register, open data, an auditable record) are the same measures that make it more efficient (lower cost, wider competition, less delay), so there is no trade-off to be managed between them.

The finding that integration, openness, and interoperability matter over and above the level of automation has a clear practical meaning. Digitizing individual steps in isolation — an electronic register here, an online auction there — leaves the underlying fragmentation intact and captures only a fraction of the available gains. The decisive step is the consolidation of all modules into a single-window environment with open data and secure connections to external state registries, so that information moves seamlessly and is visible to all legitimate parties. This is also why the largest empirical increment appears at the transition from partial automation to a unified platform.

Several policy implications follow. First, the reform should be conceived as the construction of a single integrated platform rather than as a series of disconnected digitization projects. Second, openness should



be a design principle: the register and core case data should be public and machine-readable, subject to appropriate protection of sensitive information, because openness is the primary source of both transparency and competition. Third, interoperability with the cadastre, tax, banking, and court registries should be built in, since the value of the platform rises sharply when the estate and the claims can be verified automatically against authoritative external data. Fourth, the electronic auction module should be prioritized, as it delivers the most direct gain in recovery. Fifth, implementation should be phased to capture early gains while sequencing the more demanding integration and interoperability components.

At the same time, the reform carries risks that must be managed. Cybersecurity and data protection are paramount, because a single platform concentrates sensitive financial information and becomes a high-value target; robust security, access controls, and audit mechanisms are therefore integral to the design rather than optional additions. The digital divide — unequal access to technology and skills among creditors, debtors, and buyers — must be addressed through accessible interfaces, support services, and, where necessary, assisted access, so that digitalization widens rather than narrows participation. Finally, the human and organizational dimension — the training of administrators and judges, the redesign of workflows, and the management of resistance to change — is decisive: the platform delivers its benefits only if it is genuinely used and trusted.

The study is subject to limitations. The empirical magnitudes are illustrative and based on a limited sample, and should be re-estimated on comprehensive data as platforms are deployed and usage data accumulate. Because the level of digitalization is correlated with broader institutional quality, the estimates capture associations that may combine causal and contextual effects. The analysis also abstracts from the dynamics of adoption and from the interaction of the platform with the incentives of administrators and creditors, both of which merit dedicated study.

CONCLUSION AND SUGGESTIONS

This article has examined the role of a unified electronic platform in the digitalization of insolvency processes and its contribution to transparency and economic efficiency. It identified the pathologies of the non-digitalized process — high transaction costs, information asymmetry, thin auction participation, discretionary conduct, and delay — and the four channels through which a unified platform addresses them. It specified the functional architecture of such a platform and showed empirically that the level of digitalization, together with the platform's integration, openness, and interoperability, is strongly and positively associated with both procedural transparency and economic efficiency, including a higher recovery rate.

The central conclusion is that transparency and economic efficiency are complementary outcomes of the same institutional technology: the unified electronic platform raises both at once, with the decisive gains arising from the integration of modules into a single-window, open, interoperable environment rather than from the isolated automation of individual steps. The platform should therefore be treated as a structural reform of the insolvency system, implemented in phases and supported by safeguards for cybersecurity, data protection, and digital inclusion.

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