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Modeling Strategic Agility Based on Technological Transformation Considering Mediating and Moderating Variables

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ABSTRACT

Objective: The present study aimed to model strategic agility based on technological transformation while considering mediating and moderating variables.

Methods and Materials: This study was grounded in the positivist research philosophy, employed a descriptive-correlational design, and adopted a quantitative approach using structural equation modeling (SEM) to achieve the research objectives. The statistical population consisted of all employees of customs administrations across the provinces of Iran, from whom a sample of 360 participants was selected using proportionate stratified probability sampling. The sample size was determined based on Cohen's (1988) statistical power analysis tables for multivariate tests. Data were collected using a researcher-developed questionnaire. Structural equation modeling was performed using SmartPLS version 3.

Findings: The findings indicated that technological transformation had a positive and significant effect on decision-making dynamism ($\beta = .187$), decision-making dynamism had a positive and significant effect on structural reconfiguration ($\beta = .490$), structural reconfiguration had a positive and significant effect on ecosystem coordination ($\beta = .162$), ecosystem coordination had a positive and significant effect on operational agility ($\beta = .250$), and operational agility had a positive and significant effect on strategic agility ($\beta = .159$; $t > 1.96$, $p < .05$). Furthermore, the enablers and barriers of human resource dynamism positively moderated the relationships among all the aforementioned variables ($p < .01$). The bootstrapping test also confirmed the validity of the serial mediation pathway from technological transformation to the realization of strategic agility ($\beta = .101$, $t = 2.463$, $p < .01$).

Conclusion: Strategic agility in customs administration is the outcome of a synergistic value chain comprising technology, intelligent decision-making, structural reform, and external coordination, the functioning of which is accelerated by human resource dynamism.

Keywords: *technological transformation, strategic agility, human resource dynamism, Iran Customs Administration.*

1 Introduction

Organizations operating in contemporary environments face an increasingly complex combination of technological disruption, regulatory pressure, accelerating stakeholder expectations, environmental uncertainty, and intensified interorganizational dependence. Under these conditions, competitive and institutional survival depends not merely on possessing resources, but on the capacity to sense changes rapidly, make timely strategic decisions, reconfigure organizational structures, coordinate effectively with external actors, and translate technological investments into adaptive action. This broader capability is commonly conceptualized as strategic agility, a multidimensional organizational capacity that enables firms and public organizations to respond quickly and coherently to emerging opportunities and threats while continuously renewing strategic priorities, operational arrangements, and business models. The importance of strategic agility has intensified in the digital era because technological transformation continuously alters the information available to decision-makers, the speed of organizational processes, the architecture of value creation, and the boundaries between organizations and their ecosystems. In this context, strategic agility is not simply a reactive competence; rather, it constitutes a dynamic capacity for organizational renewal and strategic responsiveness under conditions of turbulence and discontinuous change (Doz & Kosonen, 2010; Teece, 2007).

The theoretical foundations of strategic agility are closely related to the dynamic capabilities perspective, which explains how organizations achieve sustained performance by integrating, building, and reconfiguring internal and external competencies in response to rapidly changing environments. Dynamic capabilities emphasize the organizational processes through which opportunities and threats are sensed, strategic choices are made, resources are mobilized, and organizational assets are transformed in alignment with environmental requirements. From this perspective, strategic agility can be understood as an organizational manifestation of dynamic capability: the ability to perceive change early, make high-quality strategic decisions quickly, and rearrange organizational resources and structures before environmental changes undermine performance. Teece's framework emphasizes that sustainable advantage depends less on static resource possession and more on the capability to continuously recombine and transform organizational resources in changing environments (Teece, 2007). Likewise, Doz and Kosonen argue that strategic agility requires strategic sensitivity, collective commitment, and resource fluidity, all of which allow organizations to accelerate business model renewal and avoid rigidity in decision-making and resource allocation (Doz & Kosonen, 2010). These theoretical insights are particularly important for understanding public-sector organizations, where structural inertia, procedural constraints, and complex stakeholder relationships can substantially limit organizational responsiveness.

Technological transformation has become one of the most consequential forces shaping strategic agility. It extends beyond the mere adoption of digital tools and encompasses fundamental changes in organizational processes, information architectures, managerial practices, service-delivery mechanisms, decision systems, and interorganizational relationships. Digital technologies increasingly enable organizations to collect and process data in real time, automate routine functions, integrate dispersed organizational units, improve transparency, and support evidence-based strategic decisions. Consequently, technological transformation may strengthen strategic agility by reducing information asymmetry, shortening decision cycles, increasing organizational visibility, and creating more flexible mechanisms for resource deployment. Recent research has therefore increasingly treated digital transformation as a strategic capability rather than as a purely technical modernization initiative. Shao emphasizes that digital transformation can enhance organizational agility and competitive advantage by increasing responsiveness, improving coordination, and enabling organizations to adapt more effectively to environmental change (Shao, 2025). Similarly, Bounfour et al. show that digital transformation can support strategic agility during periods of severe disruption by facilitating the conversion of intangible capital into adaptive organizational responses (Bounfour et al., 2023).

The relationship between technological transformation and strategic agility, however, is unlikely to be direct or automatic. Technology creates possibilities for faster information processing, improved connectivity, and enhanced organizational visibility, but these possibilities must be translated into managerial and organizational capabilities before they can produce strategic agility. In particular, organizations need to convert technological resources into more dynamic and intelligent decision-making processes. Strategic decision-making dynamism and intelligence refer to the ability to gather relevant information rapidly, interpret environmental signals, evaluate strategic alternatives, and make timely decisions under uncertainty. Digital transformation can strengthen these processes by improving access to data, enabling analytics, integrating information flows, and supporting predictive and scenario-based decision-making. Qiao et al. demonstrate that digital transformation and digital leadership can improve employee performance and organizational commitment by creating more responsive and technology-enabled organizational environments, indicating that technological transformation has implications not only for systems and infrastructure but also for managerial cognition and organizational behavior (Qiao et al., 2024). In the same vein, Lamberg emphasizes that technological transformation can become a pathway to organizational survival when technological change is accompanied by strategic adaptation and organizational responsiveness (Lamberg, 2023).

Strategic decision-making is especially important because organizations cannot become agile merely by possessing more information; they must also possess the capability to interpret and act upon that information. In turbulent environments, the quality and speed of decision-making become critical determinants of whether technological capabilities are converted into adaptive outcomes. Strategic agility requires decision processes that are sufficiently flexible to respond to unexpected change while remaining sufficiently coordinated to preserve organizational coherence. This requirement is particularly relevant in bureaucratic and highly regulated organizations, where formalized procedures can slow the translation of information into action. If technological transformation is integrated into decision processes, organizations can potentially shorten decision cycles, decentralize selected decisions, enhance real-time monitoring, and strengthen strategic foresight. These mechanisms can increase organizational capacity to detect emerging operational bottlenecks and external changes before they become major disruptions. Therefore, decision-making dynamism and intelligence may function as a critical intermediate mechanism linking technological transformation to later stages of structural and operational adaptation.

Once strategic decisions have been made, organizational agility also depends on the ability to reconfigure organizational structures and adapt processes. Structural reconfiguration involves modifying roles, workflows, authority relationships, resource allocations, and coordination arrangements to ensure that strategic decisions can be implemented effectively. Organizations with rigid structures may recognize change accurately but still fail to respond because existing organizational arrangements prevent rapid implementation. By contrast, adaptive structures facilitate resource mobility, cross-functional collaboration, decentralization where appropriate, and accelerated process redesign. The dynamic capabilities perspective suggests that reconfiguration is central to organizational adaptation because sensing opportunities and making strategic commitments have limited value unless organizational resources can subsequently be reorganized (Teece, 2007). Doz and Kosonen similarly emphasize resource fluidity as a core foundation of strategic agility, highlighting the need to overcome structural and cognitive rigidities that prevent rapid strategic renewal (Doz & Kosonen, 2010). Accordingly, structural reconfiguration and process adaptation can be conceptualized as an important link between strategic decision-making and broader organizational agility.

Empirical research also indicates that strategic flexibility and structural adaptability are important for organizational resilience under crisis conditions. Alzuod and Alqhaiwi found that strategic flexibility enhanced crisis management in the commercial banking sector during the COVID-19 pandemic, demonstrating that organizations with greater capacity to modify strategic and operational arrangements were better positioned to respond to disruptive conditions (Alzuod & Alqhaiwi, 2022). Such findings are relevant beyond the private sector because public organizations also encounter crises, regulatory change, technological disruptions, and shifting service demands. In customs administration, for example, changes in trade volumes, security requirements, international regulations, logistics technologies, risk-management systems, and stakeholder expectations may require rapid adjustment of both structures and processes. A technologically advanced customs organization may therefore remain strategically inflexible if its internal structures cannot be reconfigured in response to changing priorities.

Strategic agility also depends increasingly on the organization's capacity to coordinate and integrate with its broader ecosystem. Modern organizations do not operate as isolated entities; they are embedded in networks of regulators, suppliers, customers, technology providers, governmental agencies, international organizations, and other stakeholders. Ecosystem coordination and integration refer to the capacity to align information flows, processes, standards, responsibilities, and strategic priorities across organizational boundaries. This capability becomes especially important in public-sector and customs settings, where organizational effectiveness depends on cooperation among multiple governmental bodies, transportation and logistics firms, importers and exporters, financial institutions, technology providers, and international regulatory actors. Oh emphasizes that ecosystem integration can strengthen strategic agility in public-sector organizations by improving coordination, information sharing, and the capacity to respond collectively to changing environmental conditions (Oh, 2022). In this sense, structural reconfiguration within the organization may create the internal conditions necessary for more effective external coordination, thereby extending agility from the organizational level to the broader institutional ecosystem.

The importance of ecosystem integration is amplified by technological transformation because digital systems increasingly connect organizations to external actors through shared platforms, real-time data exchange, electronic documentation, digital tracking, and integrated service infrastructures. However, technological connectivity alone does not guarantee ecosystem coordination. Effective integration requires interoperable processes, trust, information-sharing protocols, institutional alignment, and the ability to redesign internal routines in ways that support interorganizational collaboration. Thus, technological transformation may initiate a chain of organizational change in which improved decision-making leads to structural adaptation, which in turn enables more effective ecosystem coordination. This sequential logic provides a more nuanced account of how technology may ultimately influence strategic agility than models that assume a simple direct effect.

The next stage in this capability chain concerns operational agility and accelerated stakeholder responsiveness. Operational agility refers to the capacity to adjust organizational processes rapidly, maintain service continuity, reallocate resources, and respond quickly to changing stakeholder requirements. Strategic agility cannot be achieved solely at the level of executive decision-making or organizational design; it must become visible in daily operations. When ecosystem coordination is effective, organizations gain access to more timely information, improved interorganizational alignment, and more efficient process interfaces, which can accelerate operational responses. In customs administration, operational agility may involve faster clearance procedures, more adaptive risk assessment, accelerated coordination with trade partners, improved responsiveness to regulatory changes, and greater capacity to manage sudden fluctuations in trade and logistics activity. Gharbi J et al. demonstrate the relevance of digital transformation to organizational agility by modeling agility in education departments through a digital transformation approach, suggesting that technological modernization can improve organizational responsiveness when embedded in broader managerial and structural mechanisms (Gharbi J et al., 2022).

Strategic agility ultimately emerges when operational responsiveness becomes integrated with strategic renewal. Operational agility enables organizations to act quickly, but strategic agility additionally requires that these responses remain aligned with long-term objectives, environmental interpretation, and changing institutional conditions. This distinction is important because organizations may be operationally efficient without being strategically adaptive. Strategic agility therefore represents a higher-order capacity in which rapid operational response is connected to strategic sensitivity, organizational renewal, and resource reconfiguration. Vishlaghi et al., in developing a strategic agility model in relation to sustainable production growth, emphasize the multidimensional character of strategic agility and its dependence on organizational mechanisms that extend beyond isolated operational improvements (Vishlaghi et al., 2021). Similarly, Rawashdeh et al. demonstrate that strategic agility and digital transformation are interconnected in ways that can influence broader organizational outcomes, including environmental sustainability, reinforcing the view that digital capabilities and strategic agility should be examined as part of an integrated organizational system rather than as independent phenomena (Rawashdeh et al., 2024).

The role of intangible and knowledge-based resources further reinforces this systemic perspective. Technological infrastructure may be rapidly acquired, but the ability to derive strategic value from technology depends heavily on organizational knowledge, intellectual assets, managerial competencies, and human capital. Vahdati et al. show that knowledge strategy and intellectual assets play an important role in enhancing agility in Iran's digital content industry, indicating that organizational agility depends on the effective mobilization of intangible resources alongside technological capabilities (Vahdati et al., 2023). Bounfour et al. likewise emphasize intangible capital conversion as a central mechanism through which digital transformation contributes to strategic agility under crisis conditions (Bounfour et al., 2023). These findings suggest that technological transformation is best understood as an organizational transformation process whose effectiveness depends on human and intellectual capacities rather than as an infrastructure-centered initiative.

Human resource dynamism is therefore likely to be particularly important in determining whether technological transformation and intermediate organizational capabilities lead to strategic agility. Human resource dynamism refers to the organization's capacity to develop adaptable employees, support learning, facilitate behavioral flexibility, encourage technological readiness, and mobilize human competencies in response to changing organizational demands. Employees are the actors who interpret technological outputs, implement new decisions, redesign routines, collaborate across organizational boundaries, and translate strategic priorities into operational action. If employees resist change, lack appropriate capabilities, or operate within restrictive human resource systems, technological transformation may fail to generate expected organizational outcomes. Conversely, supportive human resource conditions can amplify the effects of technology, strategic decision-making, structural adaptation, and ecosystem coordination by enabling individuals and teams to respond effectively to evolving requirements.

Barrington and Wood specifically emphasize the moderating role of employee agility in the relationship between human capital dynamics and digital transformation, suggesting that the strategic value of digital transformation is contingent upon the adaptive capacity of employees (Barrington & Wood, 2021). This perspective is particularly relevant to the present study because it implies that human resource conditions may strengthen or weaken the relationships among the successive stages of organizational transformation. Human resource dynamism can operate as an enabling context when employees possess digital competencies, adaptive mindsets, collaborative capabilities, and sufficient autonomy to respond to technological and strategic change. At the same time, barriers such as resistance to change, skill deficiencies, rigid personnel systems, communication problems, and insufficient training can constrain the conversion of technological transformation into organizational agility. Accordingly, examining the enablers and barriers of human resource dynamism as a moderating variable provides a more realistic account of how strategic agility develops within complex organizations.

This moderating perspective also helps explain why similar technological investments may produce different organizational outcomes. Two organizations can deploy comparable digital platforms yet experience substantially different levels of agility because their decision systems, structural arrangements, ecosystem relationships, and human resources differ. Shao's strategic perspective on digital transformation highlights that competitive and agility-related benefits emerge from the organizational use and integration of digital capabilities rather than from technological adoption in isolation (Shao, 2025). Qiao et al. similarly indicate that the organizational effects of digital transformation are shaped by leadership and employee-related mechanisms (Qiao et al., 2024). Therefore, understanding strategic agility requires examining not only direct relationships but also the mediating and moderating mechanisms through which technological transformation is translated into adaptive organizational outcomes.

The importance of this issue is particularly pronounced in customs administrations. Customs organizations occupy a critical position at the intersection of government regulation, international trade, economic security, logistics, taxation, risk management, border control, and stakeholder service. Their operating environments are characterized by high transaction volumes, regulatory complexity, international interdependence, rapidly evolving digital technologies, and strong demands for both control and facilitation. Customs administrations must simultaneously reduce processing times, ensure regulatory compliance, manage risk, prevent illicit trade, maintain data integrity, and coordinate with a wide range of domestic and international stakeholders. These competing demands make strategic agility especially important. A customs administration that cannot rapidly interpret technological change, adapt decision processes, restructure procedures, coordinate across its ecosystem, and respond operationally to stakeholders may experience delays, inefficiencies, and reduced institutional effectiveness.

In the Iranian context, these challenges may be compounded by the need to modernize administrative processes while maintaining coordination across geographically dispersed customs units and heterogeneous stakeholder groups. Technological transformation can provide a foundation for improved integration and responsiveness, yet the extent to which such transformation produces strategic agility depends on how it changes organizational decision-making, structures, ecosystem relationships, and operational processes. Existing studies have examined strategic agility in manufacturing, banking, education, digital industries, and broader organizational contexts (Alzuod & Alqhaiwi, 2022; Gharbi J et al., 2022; Vahdati et al., 2023; Vishlaghi et al., 2021), while international research has increasingly explored digital transformation, strategic agility, ecosystem integration, employee agility, and organizational sustainability (Barrington & Wood, 2021; Bounfour et al., 2023; Oh, 2022; Rawashdeh et al., 2024). Nevertheless, there remains a need for an integrated model that explains how technological transformation is converted into strategic agility through sequential organizational mechanisms while simultaneously accounting for the moderating role of human resource conditions.

Such an integrated model can address an important conceptual limitation in the existing literature. Much of the research treats technological transformation, strategic agility, strategic flexibility, employee agility, ecosystem integration, and organizational reconfiguration as separate relationships, whereas the development of strategic agility may more plausibly occur through an interconnected capability chain. From a dynamic capabilities perspective, technological transformation can improve sensing and information-processing capacity; enhanced decision-making can guide resource commitments; structural reconfiguration can facilitate implementation; ecosystem coordination can extend adaptation beyond organizational boundaries; and operational agility can translate these capabilities into rapid stakeholder response. Human resource dynamism may strengthen each of these relationships by increasing the organization's capacity to absorb, enact, and sustain change. Such a model is consistent with the dynamic capabilities emphasis on sensing, seizing, and transforming (Teece, 2007), with the strategic agility emphasis on sensitivity, commitment, and resource fluidity (Doz & Kosonen, 2010), and with recent empirical work connecting digital transformation to organizational agility and adaptive performance (Lamberg, 2023; Shao, 2025).

Accordingly, the present study aims to model the strategic agility of Iran Customs Administration based on technological transformation by examining the sequential mediating roles of strategic decision-making dynamism and intelligence, structural reconfiguration and process adaptation, business ecosystem coordination and integration, and operational agility and accelerated stakeholder responsiveness, while assessing the moderating role of the enablers and barriers of human resource dynamism.

2 Methods and Materials

The present study was grounded in the positivist research philosophy, employed a descriptive-correlational design, and adopted a quantitative approach using structural equation modeling to achieve the research objectives.

The statistical population consisted of all employees of customs administrations across the provinces of Iran, whose numbers were determined according to the statistics reported by the customs administration of each province. Because a complete sampling frame for the study population was unavailable, the characteristics of the population could not be assumed to be homogeneous (Williamson & Johnson, 2020). A sample of 360 participants was selected using proportionate stratified probability sampling. The sample size was determined based on Cohen's (1988) statistical power analysis tables for multivariate tests. At conventional confidence levels (95%) and a standard statistical power of .80, a sample exceeding 350 participants is capable of detecting small-to-moderate effects, particularly moderation effects, with a high degree of precision. This consideration was particularly important in the present study because the model included several moderation hypotheses (Hypotheses 6–9), and the detection of moderation effects requires relatively high statistical power, which could be achieved with a sample of 360 participants (Cohen, 1988). Finally, considering the latent variables included in the model—technological transformation, strategic decision-making, structural reconfiguration, ecosystem coordination, operational agility, strategic agility, and human resource dynamism—the sample size of 360 was considered adequate for conducting path analyses and testing both the measurement and structural models.

The data collection instrument was a researcher-developed questionnaire designed on the basis of a systematic review of the literature, an examination of relevant theoretical models, and a review of measurement instruments used in previous studies. Following the initial development of the questionnaire items, the content and face validity of the instrument were evaluated through consultation with experts in management, customs administration, and research methodology, and the necessary revisions were subsequently made. The reliability of the instrument was also assessed using Cronbach's alpha coefficient and composite reliability, while construct validity was examined through confirmatory factor analysis within the structural equation modeling framework. Accordingly, the final questionnaire resulted from the integration of theoretical foundations, previously validated instruments, and context-specific adaptations consistent with the subject of the study. The questionnaire consisted of 72 items categorized into seven components: strategic decision-making dynamism and intelligence (Items 1–13), structural reconfiguration and process adaptation (Items 14–26), operational agility and accelerated stakeholder responsiveness (Items 27–34), business ecosystem coordination and integration (Items 35–40), enablers and barriers of human resource dynamism (Items 41–57), technological transformation in customs administration (Items 58–67), and strategic agility of customs administration (Items 68–72). Responses were scored on a five-point Likert scale ranging from strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), to strongly agree (5).

Structural equation modeling was performed using SmartPLS version 3.

3 Findings and Results

The descriptive findings indicated that the majority of participants were male (53.3%), the largest age group consisted of participants aged 36–40 years (22.4%), and most participants held a bachelor's degree (55.6%). Descriptive statistics for the study variables further indicated that the mean and standard deviation were 42.380 and 5.998, respectively, for strategic decision-making dynamism and intelligence; 41.066 and 6.332 for structural reconfiguration and process adaptation; 25.316 and 3.601 for operational agility and accelerated stakeholder responsiveness; 18.809 and 2.887 for business ecosystem coordination and integration; 53.980 and 8.240 for the enablers and barriers of human resource dynamism; 31.533 and 5.105 for technological transformation in customs administration; and 16.043 and 2.953 for strategic agility of customs administration.

Covariance-based structural equation modeling generally requires assumptions such as multivariate normality and a relatively large sample size. The results of the Shapiro–Wilk and Kolmogorov–Smirnov tests were statistically significant for all study variables ($p < .05$), indicating that the data were not normally distributed. One alternative when such assumptions are violated is the use of partial least squares structural equation modeling (PLS-SEM). In evaluating structural equation models, PLS encompasses three major components: assessment of the measurement model, assessment of the structural model, and assessment of the overall model fit.

Measurement Model Fit: Indicator reliability, convergent validity, and discriminant validity were used to assess the fit of the measurement model. The indicator reliability results showed that the absolute standardized factor loadings for Items 2, 14, 33, 34, 36, and 45 were below .40, whereas those of the remaining items exceeded .40, with absolute t values greater than 2.58. Therefore, Items 2, 14, 33, 34, 36, and 45 were removed from subsequent analyses, while the remaining questionnaire items demonstrated acceptable reliability. Furthermore, according to the results, the variance inflation factor (VIF) values for the remaining items did not exceed 5. Thus, no problematic multicollinearity was detected in testing the proposed research model. The convergent validity results indicated that composite reliability values for the study constructs were .820 for strategic decision-making dynamism and intelligence, .842 for structural reconfiguration and process adaptation, .742 for operational agility and accelerated stakeholder responsiveness, .717 for business ecosystem coordination and integration, .859 for the enablers and barriers of human resource dynamism, 1.000 for technological transformation in customs administration, and .779 for strategic agility of customs administration. Cronbach's alpha coefficients were .761 for strategic decision-making dynamism and intelligence, .795 for structural reconfiguration and process adaptation, .726 for operational agility and accelerated stakeholder responsiveness, .706 for business ecosystem coordination and integration, .824 for the enablers and barriers of human resource dynamism, 1.000 for technological transformation in customs administration, and .745 for strategic agility of customs administration. Because all reliability coefficients exceeded .70 and the average variance extracted (AVE) for all constructs exceeded .50, the constructs demonstrated adequate convergent validity and internal consistency. Finally, discriminant validity was assessed using the discriminant validity matrix, the results of which are presented in Table 1.

Table 1

Results of the Discriminant Validity Assessment

Variable	1	2	3	4	5	6	7
1. Structural reconfiguration and process adaptation	.713						
2. Enablers and barriers of human resource dynamism	.526	.760					
3. Technological transformation in customs administration	.564	.738	.719				
4. Business ecosystem coordination and integration	.354	.360	.374	.739			
5. Strategic decision-making dynamism and intelligence	.227	.261	.728	.789	.760		
6. Strategic agility of customs administration	.212	.595	.725	.744	.646	.720	
7. Operational agility and accelerated stakeholder responsiveness	.234	.240	.249	.754	.808	.836	.729

As shown in Table 1, the values on the main diagonal were the highest values within their respective columns, indicating acceptable discriminant validity of the constructs. Therefore, the measurement model was supported.

Structural Model Fit: The structural model fit indices included the coefficient of determination (R^2), the predictive relevance criterion (Q^2), and t values. The results of these assessments are presented in Table 2. Blindfolding was used to evaluate the predictive relevance of the structural model.

Table 2

Structural Model Fit

Variable	Predictive Relevance (Q^2)	Coefficient of Determination (R^2)
Structural reconfiguration and process adaptation	.289	.397
Enablers and barriers of human resource dynamism	.377	Exogenous variable
Technological transformation in customs administration	.374	Exogenous variable
Business ecosystem coordination and integration	.156	.378
Strategic decision-making dynamism and intelligence	.333	.326
Strategic agility of customs administration	.357	.202
Operational agility and accelerated stakeholder responsiveness	.195	.373

Table 2 shows that the R^2 and Q^2 values were above .19 and .15, respectively. Accordingly, the model demonstrated an acceptable level of structural fit and predictive relevance. In general, the closer these values are to 1, the greater the explanatory and predictive strength of the structural model.

Overall Model Fit: Finally, overall model fit, which simultaneously evaluates the measurement and structural components of the model, was calculated in PLS using the equation. The GoF value obtained in the present study was .306. Given that values of .01, .25, and .36 have been proposed as indicative of weak, moderate, and strong overall model fit, respectively, the obtained value of .306 indicates an acceptable-to-moderate overall fit of the proposed model. The research model is presented in Figure 1 based on the path coefficients and in Figure 2 based on the t values.

Figure 1

Research Model Based on Path Coefficients

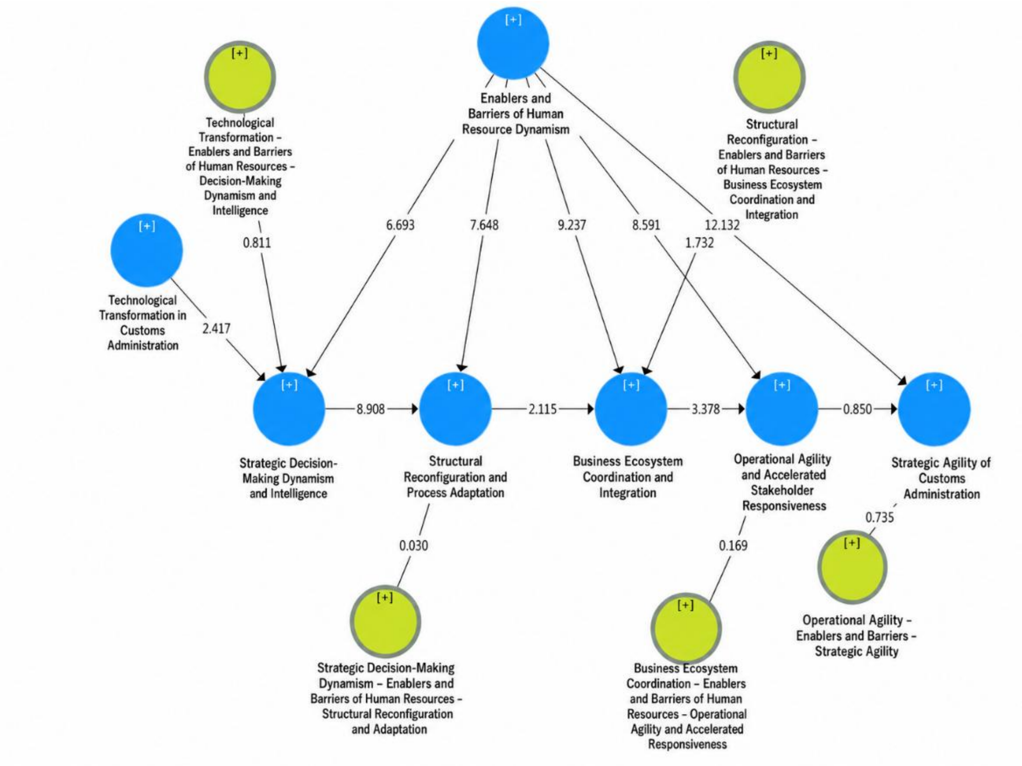
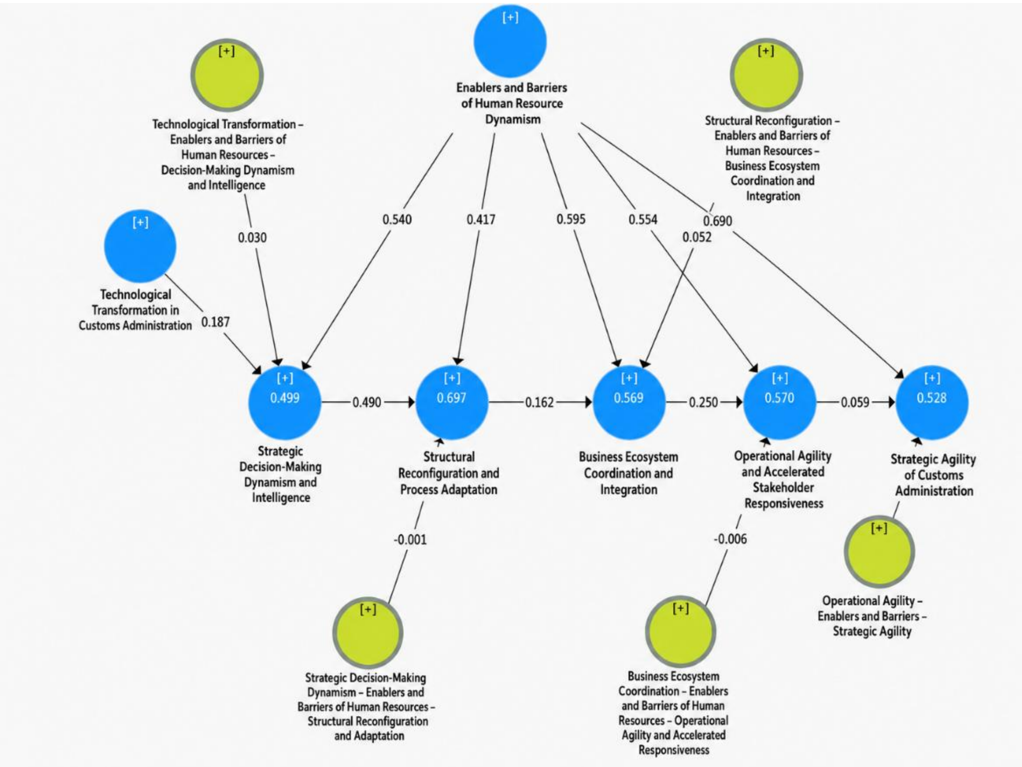


Figure 2

Research Model Based on t Values



To examine the findings, two criteria—the standardized beta coefficient and the t statistic—were used to test the hypothesized relationships. A t statistic greater than 1.96 for the relationships among the study variables was considered indicative of statistical significance. The findings are presented in Table 3. Direct paths were examined first (Table 3).

Table 3

Direct Paths

Path	Path Coefficient	t Statistic	p Value	95% Confidence Interval	Effect Size (f^2)	Result
Technological transformation in customs administration → Strategic decision-making dynamism and intelligence	.187	2.304	.022	[.047, .367]	.130	Supported
Strategic decision-making dynamism and intelligence → Structural reconfiguration and process adaptation	.490	9.201	< .001	[.386, .594]	.410	Supported
Structural reconfiguration and process adaptation → Business ecosystem coordination and integration	.162	2.186	.029	[.015, .307]	.126	Supported
Business ecosystem coordination and integration → Operational agility and accelerated stakeholder responsiveness	.250	3.186	.002	[.071, .387]	.163	Supported
Operational agility and accelerated stakeholder responsiveness → Strategic agility of Iran Customs Administration	.159	2.875	.002	[.077, .382]	.103	Supported

According to Table 3, technological transformation in customs administration had a positive and statistically significant effect on strategic decision-making dynamism and intelligence (β = .187, t = 2.304, p < .05, f^2 = .130), because the t value exceeded 1.96 and the significance level was below .05. The beta coefficient for the effect of technological transformation in customs administration on strategic decision-making dynamism and intelligence was .187, indicating that a one-standard-deviation increase in technological transformation was associated, on average, with a .187-standard-deviation increase in strategic decision-making dynamism and intelligence. Effect size (f^2) was also examined to assess the practical importance of each predictor's contribution to the explained variance of the endogenous constructs. An effect size of f^2 = .130 indicates that the effect of technological transformation in customs administration on strategic decision-making dynamism and intelligence was moderate. Strategic decision-making dynamism and intelligence also had a positive and statistically significant effect on structural reconfiguration and process adaptation (β = .490, t = 9.201, p < .01, f^2 = .410). The beta coefficient indicates that a one-standard-deviation increase in strategic decision-making dynamism and intelligence was associated, on average, with a .490-standard-deviation increase in structural reconfiguration and process adaptation. Moreover, the effect size of f^2 = .410 indicates a strong effect of strategic decision-making dynamism and intelligence on structural reconfiguration and process adaptation. Structural reconfiguration and process adaptation had a positive and statistically significant effect on business ecosystem coordination and integration (β = .162, t = 2.186, p < .05, f^2 = .126). The beta coefficient indicates that a one-standard-deviation increase in structural reconfiguration and process adaptation was associated, on average, with a .162-standard-deviation increase in business ecosystem coordination and integration. The effect size of f^2 = .126 further indicates that the effect of structural reconfiguration and process adaptation on business ecosystem coordination and integration was moderate. Business ecosystem coordination and integration had a positive and statistically significant effect on operational agility and accelerated stakeholder responsiveness (β = .250, t = 3.186, p = .002, f^2 = .163). The beta coefficient indicates that a one-standard-deviation increase in business ecosystem coordination and integration was associated, on average, with a .250-standard-deviation increase in operational agility and accelerated responsiveness. The effect size of f^2 = .163 indicates that the effect of business ecosystem coordination and integration on operational agility and accelerated stakeholder responsiveness was moderate to relatively strong. Operational agility and accelerated stakeholder responsiveness also had a positive and statistically significant effect on strategic agility of Iran Customs Administration (β = .159, t = 2.875, p < .05, f^2 = .103). The beta coefficient indicates that a one-standard-deviation increase in operational agility and accelerated stakeholder responsiveness was associated, on average, with a .159-standard-deviation increase in strategic agility of Iran Customs Administration. The effect size of f^2 = .103 indicates that the effect of operational agility and accelerated stakeholder responsiveness on strategic agility of Iran Customs Administration was moderate. In addition, the 95% confidence intervals for all relationships excluded zero, providing further evidence of the robustness and statistical significance of the hypothesized effects.

Subsequently, to explain the moderating role of the enablers and barriers of human resource dynamism in the strategic agility process, the interaction effect of the "enablers and barriers of human resource dynamism" on the relationships among the components of the model was examined. The two-stage approach was used to estimate these interaction effects because this method provides greater predictive capability in models containing moderating variables. The results are presented in Table 4.

Table 4

Moderating Role of the Enablers and Barriers of Human Resource Dynamism

Moderation Path	Interaction Effect	SE	*t* Value	*p* Value	95% CI	Result
Technological transformation × Enablers and barriers of human resource dynamism → Strategic decision-making dynamism and intelligence	.130	.034	3.824	< .001	[.063, .197]	Supported
Strategic decision-making dynamism and intelligence × Enablers and barriers of human resource dynamism → Structural reconfiguration and process adaptation	.101	.020	5.050	< .001	[.062, .140]	Supported
Structural reconfiguration and process adaptation × Enablers and barriers of human resource dynamism → Business ecosystem coordination and integration	.152	.029	5.241	< .001	[.095, .209]	Supported
Business ecosystem coordination and integration × Enablers and barriers of human resource dynamism → Operational agility and accelerated stakeholder responsiveness	.126	.031	4.065	< .001	[.065, .187]	Supported

The results presented in Table 4 showed that the interaction coefficients for all research paths were positive and statistically significant at the 99% confidence level ($p < .01$). The positive coefficients indicate that the enablers and barriers of human resource dynamism function as a moderator; that is, as the enabling conditions associated with human resources improve, the magnitude of the effects of technological transformation and the intermediate organizational capabilities on the realization of strategic agility increases significantly. Furthermore, the fact that none of the confidence intervals included zero confirms the statistical significance indicated by the t statistics.

Subsequently, bootstrapping was used to examine the mediating effects specified in the proposed research model. The results are presented in Table 5.

Table 5

Tests of Mediating Effects

Mediation Path	Indirect Effect	SE	*t* Value	*p* Value	95% CI	Result
Technological transformation → Strategic decision-making dynamism and intelligence → Structural reconfiguration and process adaptation	.091	.039	2.339	.020	[.024, .173]	Supported
Structural reconfiguration and process adaptation → Business ecosystem coordination and integration → Operational agility and accelerated stakeholder responsiveness	.040	.016	2.500	.006	[.009, .071]	Supported
Technological transformation → Serial intermediate variables (decision-making, structure, coordination, and operational agility) → Strategic agility of Iran Customs Administration	.101	.041	2.463	.007	[.021, .181]	Supported

The findings obtained from the bootstrapping procedure for evaluating the indirect effects of the model are presented in Table 5. The results indicate that all examined mediation paths were statistically significant at the 95% confidence level. In the first path, the indirect effect of technological transformation on structural reconfiguration and process adaptation through the mediating variable of strategic decision-making dynamism and intelligence was positive and statistically significant ($\beta = .091$, $t = 2.339$, $p = .020$). The exclusion of zero from the 95% confidence interval [.024, .173] confirms the mediating role of strategic decision-making dynamism and intelligence in this relationship. In the second path, the mediating role of business ecosystem coordination and integration in the relationship between structural reconfiguration and operational agility was supported ($\beta = .040$, $t = 2.500$, $p = .006$), with the lower and upper bounds of the confidence interval [.009, .071] confirming the statistical significance of the indirect effect. Finally, the results for the more complex serial mediation pathway indicated that technological transformation exerted a positive and statistically significant effect on strategic agility of Iran Customs Administration through the sequential mediators of decision-making, structural reconfiguration, ecosystem coordination, and operational agility (β = .101, t = 2.463, p = .007). Because the confidence interval for this path [.021, .181] did not include zero, the serial mediation hypothesis was supported. These findings indicate that technological transformation ultimately contributes to enhanced strategic agility within the organization by generating a value-creation flow through a sequence of intermediate organizational capabilities.

4 Discussion

The present study examined a structural model of strategic agility in Iran Customs Administration based on technological transformation, with strategic decision-making dynamism and intelligence, structural reconfiguration and process adaptation, business ecosystem coordination and integration, and operational agility and accelerated stakeholder responsiveness positioned as sequential mediators, while the enablers and barriers of human resource dynamism were considered as moderators. The results supported the proposed conceptual model. Technological transformation exerted a positive and significant effect on strategic decision-making dynamism and intelligence (β = .187, $p < .05$); strategic decision-making dynamism and intelligence positively predicted structural reconfiguration and process adaptation (β = .490, $p < .01$); structural reconfiguration and process adaptation had a positive effect on business ecosystem coordination and integration (β = .162, $p < .05$); business ecosystem coordination and integration positively influenced operational agility and accelerated stakeholder responsiveness (β = .250, $p < .01$); and operational agility and accelerated stakeholder responsiveness positively predicted strategic agility (β = .159, $p < .05$). Moreover, the interaction effects associated with the enablers and barriers of human resource dynamism were positive and significant across the examined paths. Finally, the bootstrapping analysis confirmed both specific indirect effects and the serial mediating pathway through which technological transformation ultimately contributed to strategic agility (β = .101, $p < .01$). Collectively, these findings indicate that strategic agility is generated not by technological transformation alone, but through an interconnected sequence of managerial, structural, ecosystem-level, operational, and human-resource capabilities.

The first finding showed that technological transformation positively influenced strategic decision-making dynamism and intelligence. This result indicates that the development and application of advanced technological infrastructures can improve the capacity of customs administrators to acquire, process, interpret, and use information in strategic decision-making. In complex organizations such as customs administrations, technological transformation can increase the availability of real-time information, strengthen data integration, reduce information-processing delays, and facilitate more accurate identification of environmental opportunities and threats. This interpretation is consistent with Shao, who emphasized that digital transformation strengthens organizational agility by improving information processing, responsiveness, and strategic adaptation (Shao, 2025). It is also aligned with Qiao et al., who demonstrated that digital transformation contributes to improved organizational functioning through digital leadership, enhanced employee performance, and stronger organizational commitment (Qiao et al., 2024). From a dynamic capabilities perspective, technological resources strengthen the organizational ability to sense changes and opportunities, thereby improving the informational basis for strategic action (Teece, 2007). Lamberg similarly emphasized that technological transformation contributes to organizational survival when it is translated into strategic responsiveness rather than remaining confined to technological modernization (Lamberg, 2023). Accordingly, in the customs context, technological transformation appears to operate as a foundational capability that enhances the speed, quality, and intelligence of strategic decisions.

The second finding indicated that strategic decision-making dynamism and intelligence had the strongest direct effect in the proposed chain, positively predicting structural reconfiguration and process adaptation (β = .490). This relatively strong path suggests that strategic decisions constitute a critical mechanism through which technological information is translated into organizational change. Organizations may possess sophisticated technological systems, but unless managers use the resulting information to revise structures, redistribute authority, redesign procedures, and adjust organizational processes, technological investments are unlikely to create meaningful strategic agility. This finding is highly consistent with the strategic agility framework proposed by Doz and Kosonen, who argued that strategic sensitivity must be accompanied by collective commitment and resource fluidity for strategic renewal to occur (Doz & Kosonen, 2010). It is also compatible with Teece's dynamic capabilities model, in which sensing opportunities must be followed by seizing them and transforming organizational resources and structures (Teece, 2007). The result also parallels Alzuod and Alqhaiwi's finding that strategic flexibility enhances organizational crisis-management capability, because organizations that are able to revise strategies and operational arrangements can adapt more effectively under uncertainty (Alzuod & Alqhaiwi, 2022). Therefore, the present findings suggest that dynamic and intelligent decision-making serves as an essential bridge between technological transformation and structural adaptation.

The positive relationship between structural reconfiguration and process adaptation and business ecosystem coordination and integration further supports the sequential logic of the model. Structural flexibility appears to improve an organization's ability to coordinate with actors beyond its formal organizational boundaries. In customs administration, ecosystem coordination requires continuous interaction with ministries, transportation organizations, financial institutions, importers, exporters, logistics companies, regulatory agencies, and international trade partners. Rigid organizational structures and fragmented procedures can inhibit information exchange and create interorganizational bottlenecks. By contrast, process adaptation, cross-functional coordination, and flexible allocation of responsibilities can facilitate more effective ecosystem-level integration. This finding is consistent with Oh's argument that ecosystem integration enhances strategic agility in public-sector organizations by strengthening interorganizational coordination, information sharing, and responsiveness (Oh, 2022). It is also in line with Gharbi J et al., whose digital transformation-based model of organizational agility showed that agility requires not only technological capacities but also the redesign and integration of organizational processes (Gharbi J et al., 2022). Hence, the present finding implies that internal structural adaptation is an important prerequisite for effective external coordination.

The next finding showed that business ecosystem coordination and integration positively influenced operational agility and accelerated stakeholder responsiveness. This result demonstrates that closer alignment with external actors can enhance the organization's capacity to respond more rapidly to stakeholder requirements and operational changes. When organizational units and external stakeholders exchange information effectively, coordinate procedures, and integrate service-related processes, delays and inconsistencies can be reduced. Such integration is especially important for customs organizations because operational performance depends heavily on synchronized activities across organizational and institutional boundaries. Oh's findings regarding public-sector ecosystem integration similarly indicate that organizational agility is strengthened when public organizations develop more integrated relationships with external actors (Oh, 2022). Bounfour et al. also showed that digital transformation can strengthen strategic agility by facilitating the conversion of intangible capital and enhancing adaptive responses under crisis conditions (Bounfour et al., 2023). From this perspective, ecosystem coordination allows information and organizational knowledge to move more efficiently across boundaries, thereby improving the speed of operational responses.

The positive effect of operational agility and accelerated stakeholder responsiveness on strategic agility provides further evidence that strategic agility must ultimately become manifested in operational behavior. Although strategic agility is a higher-order organizational capability, it cannot be realized unless organizations can translate strategic intentions into rapid and adaptive operational action. The finding suggests that customs organizations become strategically agile when they can adjust day-to-day processes, respond quickly to stakeholder requirements, and adapt operational activities to environmental change without losing strategic direction. This result is consistent with Vishlaghi et al., who emphasized the multidimensional nature of strategic agility and showed that organizational agility emerges from interconnected strategic and operational mechanisms rather than from isolated organizational actions (Vishlaghi et al., 2021). Rawashdeh et al. similarly found that strategic agility is interconnected with digital transformation and contributes to broader organizational outcomes, demonstrating that agility should be regarded as an integrated strategic capability (Rawashdeh et al., 2024). The present findings therefore reinforce the proposition that operational responsiveness is an immediate organizational foundation of strategic agility.

An important contribution of the study concerns the moderating role of the enablers and barriers of human resource dynamism. The interaction effects were positive and statistically significant across all tested relationships, indicating that favorable human-resource conditions strengthen the conversion of technological and organizational capabilities into subsequent stages of agility. Specifically, human resource dynamism strengthened the effects of technological transformation on strategic decision-making, strategic decision-making on structural reconfiguration, structural reconfiguration on ecosystem coordination, and ecosystem coordination on operational agility. This finding demonstrates that employees are not passive recipients of digital and structural transformation. Rather, their competencies, adaptability, learning orientation, technological readiness, willingness to collaborate, and responsiveness to change determine the extent to which organizational transformation generates strategic value. Barrington and Wood similarly emphasized the moderating importance of employee agility in digital transformation, showing that human capital dynamics shape whether technological change produces desirable organizational outcomes (Barrington & Wood, 2021). Qiao et al. also demonstrated that employee performance and commitment constitute important organizational mechanisms associated with digital transformation (Qiao et al., 2024). Thus, even when technological systems are available, strategic agility may remain limited when human resources lack the ability or willingness to use such systems adaptively.

The moderating role of human resource dynamism can also be explained through the importance of intangible organizational assets. Digital transformation increasingly depends on knowledge, learning, intellectual capital, and behavioral adaptation. Vahdati et al. found that knowledge strategy and intellectual assets contribute substantially to organizational agility in Iran's digital content industry (Vahdati et al., 2023). Bounfour et al. likewise emphasized that the conversion of intangible capital plays a key role in transforming digital capabilities into strategic agility (Bounfour et al., 2023). The present findings extend these arguments by showing that human-resource conditions can strengthen multiple stages of the agility-development process rather than influencing only the direct relationship between technology and agility. This suggests that customs organizations seeking strategic agility should avoid treating technological transformation as a predominantly technical initiative. Instead, technology implementation should be accompanied by human-capital development, competence building, organizational learning, employee participation, and the removal of behavioral and institutional barriers to change.

The mediation analysis provided additional support for the proposed capability chain. The indirect effect of technological transformation on structural reconfiguration and process adaptation through strategic decision-making dynamism and intelligence was positive and significant ($\beta = .091$, $p = .020$). This finding indicates that technological transformation contributes to structural adaptation partly because it enables more dynamic and informed strategic decisions. Technology therefore appears to function as an informational and analytical foundation, while decision-making acts as the organizational mechanism through which technological capabilities are translated into structural action. This finding is consistent with Lamberg's view that technological transformation must be connected to strategic adaptation in order to support organizational survival (Lamberg, 2023), as well as with Teece's conceptualization of dynamic capabilities as sequential processes involving sensing, seizing, and transforming (Teece, 2007). In practical terms, customs organizations cannot expect structural transformation simply as a consequence of technology adoption; decision-makers must actively interpret technological information and translate it into organizational redesign.

The second significant indirect effect showed that business ecosystem coordination and integration mediated the relationship between structural reconfiguration and operational agility ($\beta = .040$, $p = .006$). This finding suggests that internal organizational restructuring becomes operationally valuable when it improves the organization's capacity to coordinate with its broader ecosystem. Structural changes may create more flexible workflows and responsibilities, but their effect on operational agility is amplified when they improve information exchange and collaborative alignment with external actors. This explanation is consistent with Oh's emphasis on ecosystem integration as a mechanism of public-sector agility (Oh, 2022). It also supports the broader digital transformation literature, in which organizational performance is increasingly understood as dependent on integrated networks of internal and external capabilities rather than isolated internal optimization (Bounfour et al., 2023; Shao, 2025). Therefore, structural redesign should not be evaluated solely in terms of internal efficiency; its capacity to strengthen external coordination is equally important.

The most comprehensive finding was the confirmation of serial mediation from technological transformation to strategic agility through strategic decision-making, structural reconfiguration, ecosystem coordination, and operational agility (β = .101, p = .007). This result provides empirical support for the central proposition of the study: strategic agility is the outcome of a value-creation sequence rather than a single direct organizational effect. Technological transformation strengthens the capacity to process information and make strategic decisions; dynamic decisions facilitate structural and process reconfiguration; structural adaptation strengthens business ecosystem coordination; ecosystem integration improves operational responsiveness; and operational agility ultimately contributes to strategic agility. This sequential process closely reflects the dynamic capabilities perspective, according to which sustained organizational adaptation requires interconnected sensing, seizing, and transformation capabilities (Teece, 2007). It also aligns with Doz and Kosonen's strategic agility framework, which highlights the interaction among strategic sensitivity, collective commitment, and resource fluidity in creating sustained strategic renewal (Doz & Kosonen, 2010). Recent research similarly indicates that digital transformation can generate agility only when embedded within broader organizational capabilities and strategic processes (Rawashdeh et al., 2024; Shao, 2025).

5 Conclusion

Overall, the present model contributes to the literature by demonstrating how technological transformation can be converted into strategic agility through a coordinated set of intermediate organizational capabilities in the context of Iran Customs Administration.

The present study has several limitations that should be considered when interpreting its findings. First, the cross-sectional and correlational design limits the ability to establish definitive causal relationships among technological transformation, decision-making, structural reconfiguration, ecosystem coordination, operational agility, and strategic agility. Second, the data were obtained through self-report questionnaires, which may be affected by common method bias, social desirability, or respondents' subjective perceptions of organizational conditions. Third, although the sample included employees from customs administrations across different provinces of Iran, the institutional characteristics of customs organizations may limit the direct generalizability of the findings to private-sector organizations or other public agencies. Fourth, the study employed a researcher-developed questionnaire, and although its reliability and validity were evaluated, further validation across independent samples would strengthen confidence in the measurement model. Finally, strategic agility is a dynamic organizational phenomenon, whereas the present study captured the investigated constructs at a single point in time and therefore could not directly examine how their relationships evolve during different stages of technological transformation.

Future studies are recommended to employ longitudinal designs to examine how technological transformation and strategic agility develop over time and whether the relative importance of the mediating variables changes across different stages of organizational transformation. Researchers could also replicate the proposed model in other public organizations, logistics institutions, financial organizations, manufacturing firms, and service industries to assess its external validity. Comparative studies across countries or administrative systems could determine whether institutional and cultural conditions alter the relationships identified in the present model. Future research may also incorporate objective indicators of digital maturity, operational performance, service-delivery speed, stakeholder satisfaction, or organizational outcomes alongside self-report measures. Additional moderators, including leadership style, organizational culture, digital competence, knowledge-sharing climate, environmental turbulence, and regulatory flexibility, could be examined. Finally, qualitative or mixed-method studies could explore in greater depth how employees and managers experience the process through which technological transformation is converted into structural, ecosystem-level, and operational agility.

From a managerial perspective, customs authorities should approach strategic agility as an integrated transformation process rather than as a technology-acquisition project. Investments in digital infrastructure should be accompanied by mechanisms for converting real-time data into strategic decisions, redesigning rigid processes, decentralizing selected decision authorities, and improving coordination among customs units and external stakeholders. Managers should establish interoperable information systems and cross-organizational protocols that facilitate timely communication with importers, exporters, logistics firms, financial institutions, regulatory agencies, and other actors in the customs ecosystem. Particular attention should also be given to human resource dynamism through continuous digital-skills training, adaptive leadership development, employee participation in change initiatives, knowledge sharing, and incentive systems that reward flexibility and collaboration. Organizational barriers such as resistance to change, excessive procedural rigidity, fragmented responsibilities, and skill deficiencies should be systematically identified and reduced. By integrating technological, managerial, structural, ecosystem, operational, and human-resource initiatives, customs organizations can create the organizational conditions required for sustainable strategic agility.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

References

Alzuod, M. A., & Alqhaiwi, L. A. (2022). The Role of Strategic Flexibility in Enhancing Crisis Management in the Commercial Banking Sector During the COVID-19 Pandemic. *Corporate Governance and Organizational Behavior Review*, *6*(2).

Barrington, A., & Wood, P. (2021). Human Capital Dynamics and Digital Transformation: The Moderating Role of Employee Agility. *Journal of Strategic Management*, *45*(3), 210-228. https://doi.org/10.1007/s13132-023-01377-8

Bounfour, A., Housel, T., Silkey, T., & Nonnis, A. (2023). Digital Transformation and Strategic Agility During the COVID-19 Crisis: The Role of the Intangible Capital Conversion. *Digital Transformation and Society*, *2*(3), 257-275. https://doi.org/10.1108/DTS-09-2022-0048

Doz, Y. L., & Kosonen, M. (2010). Embedding Strategic Agility: A Leadership Agenda for Accelerating Business Model Renewal. *Long Range Planning*, *43*(2-3), 370-382. https://doi.org/10.1016/j.lrp.2009.07.006

Gharbi J, M., Salehi, M., Amirianzadeh, M., & Allah Ahmadi, E. (2022). Modeling the Agility of Education Departments with a Digital Transformation Approach. *International Journal of Digital Content Management (IJDCM)*, *2*(4), 137-163.

Lamberg, J. A. (2023). Technological Transformation and Organizational Survival: The Path to Strategic Agility. *Academy of Management Perspectives*, *37*(1), 45-62. https://doi.org/10.5267/j.ijdns.2024.2.009

Oh, J. (2022). Ecosystem Integration and Strategic Agility in Public Sectors. *International Journal of Information Management*, *62*, 102-119. https://doi.org/10.1016/j.jbusres.2022.03.038

Qiao, G., Li, Y., & Hong, A. (2024). The Strategic Role of Digital Transformation: Leveraging Digital Leadership to Enhance Employee Performance and Organizational Commitment in the Digital Era. *Systems*, *12*(11), 457. https://doi.org/10.3390/systems12110457

Rawashdeh, A., Abdallah, A. B., Alfawaeer, M., Al Dweiri, M., & Al-Jaghbeer, F. (2024). The Impact of Strategic Agility on Environmental Sustainability: The Mediating Role of Digital Transformation. *Sustainability*, *16*, 1338. https://doi.org/10.3390/su16031338

Shao, W. (2025). *The Role of Digital Transformation in Enhancing Organizational Agility and Competitive Advantages: A Strategic Perspective* Proceedings of the 3rd International Conference on Financial Technology and Business Analysis, https://doi.org/10.54254/2754-1169/154/2024.19552

Teece, D. J. (2007). Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance. *Strategic management journal*, *28*(13), 1319-1350. https://doi.org/10.1002/smj.640

Vahdati, H., Bazgir, A., & Mousavinejad, S. H. (2023). Enhancing Agility in Iran's Digital Content Industry: The Role of Knowledge Strategy and Intellectual Assets in Marketing. *Quarterly Journal of Technology Development Management*, *11*(2), 135-162.

Vishlaghi, M., Zarei, A., & Feiz, D. (2021). Designing a Strategic Agility Model in Relation to Sustainable Production Boom Based on Grounded Theory: A Study of the Automotive Industry. *Management Improvement*, *15*(2), 127-153.