

Original Article

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Analytical framework and strategies for economic development in border regions (Case study: Ilam Province)*

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Abstract

Economic development in border regions is a complex, multi layered process shaped by the simultaneous presence of territorial capacities, cross border flows, and institutional and infrastructural constraints. In such regions, proximity to the border does not automatically translate into economic development; rather, how local assets connect to national and transnational networks, along with the strength of governance capacities, determines the extent to which border advantages can be realized. Ilam Province – sharing a border with Iraq and hosting the Ilam-Mehran-Dehloran corridor as a key axis in Iran-Iraq economic and logistical interactions – provides a strong case for examining these dynamics. This study aims to develop a multi scale and relational analytical framework for the economic development of Ilam's border regions. Relevant factors were extracted through theoretical reviews, policy documents, and semi structured interviews with experts. After refinement through the Delphi process, these factors were categorized based on expert consensus into four components: strengths, weaknesses, opportunities, and threats. Findings indicate that regional economic development emerges from the interaction between internal capacities and constraints, the region's position within national and transnational networks, its connectivity with Iraq's economy, and institutional and governance capabilities. Moreover, the evaluation of internal and external factors shows that, under current conditions, the WO strategic orientation provides a more suitable starting point for intervention, without excluding other strategic pathways. Accordingly, the proposed framework emphasizes strengthening governance, reducing internal constraints, enhancing connectivity, deepening value chains, and increasing the capacity to capture benefits from cross border flows.

Keywords

Border regions
conservative strategies
economic development
integrated border management
Ilam Province
SWOT analysis

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1. Introduction

Traditionally, border regions have often been viewed as peripheries distant from the center, defensive lines, or territories subject to security restrictions. However, contemporary literature does not view a border merely as a line separating two sovereignties; rather, a border is a spatial institution that simultaneously restricts, selects, or facilitates the flow of goods, capital, labor, information, and services. From this perspective, a border region is a relational space whose economic status is shaped not only by its distance from the national center but also by the nature of the border, its permeability, economic and institutional disparities between the two sides, the quality of connectivity to domestic and cross-border networks, and multi-level governance capacity (Taubenböck et al., 2023). Global analyses of border regions reveal significant heterogeneity regarding the degree of border openness, economic and political inequalities across the border, and population and settlement dynamics; consequently, they cannot all be explained by a static “center-periphery” model that assumes the inherent deprivation of peripheral areas (Anderson and O’Dowd, 1999; Paul et al., 2026; Taubenböck et al., 2023).

Despite this heterogeneity, a set of shared structural features characterize border regions’ economic development. By creating discontinuities in markets, regulations, taxation, customs procedures, and infrastructure, the border increases transaction costs and limits local firms’ market reach. Furthermore, remoteness from hubs of capital and specialized services exacerbates center-periphery agglomeration effects, leading to the out-migration of skilled labor. With appropriate infrastructure and institutions in place, disparities in prices, wages, demand, and regulations across borders can become an advantage that stimulates trade, tourism, services, and cross-border value chains. Border economies are also particularly vulnerable to border closures, political tensions, security crises, and trade disruptions; this underscores the necessity for diversification and resilience mechanisms (Hippe et al., 2024; OECD, 2024; Sohn, 2014). Accordingly, economic development cannot be reduced to a list of unrealized potentials; rather, the mechanisms for translating territorial assets into sustainable employment, productivity, and private investment must be articulated. The literature on place-based policy emphasizes this distinction, arguing that sustainable development hinges on understanding local assets,

market failures, institutional barriers, and coordination across levels of government (OECD, 2025).

In Iran, the historical concentration of activities and infrastructure in central regions, coupled with certain security-centric approaches to border management, has contributed to persistent developmental disparities between border provinces and central areas. Comparative analysis shows that development barriers are not solely economic but are also linked to inadequate infrastructure, unequal access to services, limited institutional capacity, and centralized decision-making (Mousavi et al., 2024). Domestic studies also show that border markets, official crossings, and natural resources yield lasting impacts only when accompanied by local production linkages, financial systems, and transportation infrastructure (Badri et al., 2018; Ghadimi et al., 2023; Mirzaee et al., 2023).

Ilam Province is a suitable case study for this issue, as its border location has simultaneously created a set of opportunities and constraints. Located in the country’s west, the province shares approximately 425 kilometers of border with Iraq. Key assets include the Mehran international border crossing, cultural ties with Iraq, trade and religious tourism flows, oil and gas resources, and agricultural lands. Conversely, factors such as weak transportation networks, a lack of private investment, unemployment, labor migration, and sensitivity to developments in Iraq have hindered the transformation of these assets into sustainable development (Amanpour and Mohammadi, 2021; Piri, 2020; Omid, 2022; Mohammadpanahi et al., 2023; Yeganeh et al., 2023).

The study’s operational scope is the Ilam-Mehran-Dehloran functional network. Mehran and Dehloran serve as the primary points of contact with Iraq, while Ilam serves as the administrative and service hub linking these centers and the national network. Thus, in this context, Ilam is not merely an “immediate border city” but rather an internal, organizing component of a functional border region. This definition aligns with the province’s spatial planning document, which highlights the Ilam-Mehran and Ilam-Dehloran corridors within the development networks and economic interactions with Iraq (Supreme Council of Land Planning, 2020; Statistical Yearbook of Ilam Province, 2023).

This definition is significant because border development is not confined to the crossing point or customs zone. If goods and passengers merely pass the border without corresponding financial, tourism, and investment services being established within the

local network, the region will capture only a small share of the generated value. Conversely, linking these crossings to the counties' production capacities and Ilam's specialized services can transform a transit-based economy into a value-creating network economy. While provincial spatial planning documents reference the Mehran Free Zone, the logistics park, the Dehloran dry port, and rail connectivity, the extent to which these strategic directions have been realized – and the executive capacity required to translate them into tangible economic outcomes – warrants further examination (Supreme Council of Land Planning, 2020).

A review of studies concerning Ilam reveals that previous research has examined significant dimensions such as spatial inequality, the strategic position of the border, and drivers of regional development (Amanpour and Mohammadi, 2021; Piri, 2020; Darabi and Fani, 2021; Omidi, 2022; Mohammadpanahi et al., 2023; Yeganeh et al., 2023). However, three gaps remain: a lack of analytical distinction among border levels; failure to link general characteristics of border economies to Ilam's specific situation; and limitations in explaining the causal relationships among spatial structure, institutional capacity, and economic outcomes. Against this backdrop, several questions arise: what internal and external factors critically influence the economic development of Ilam Province's border regions – categorized as strengths, weaknesses, opportunities, and threats – according to expert consensus? Based on an assessment of these internal and external factors, how can the strategic position of the Ilam-Mehran-Dehloran economic development axis be characterized? Considering these factors, what framework can guide this axis's economic development?

To address these gaps, the present study adopts a context-oriented, integrative approach and pursues three complementary paths. First, to address the lack of analytical distinction between different border levels, the research focuses specifically on the Ilam-Mehran-Dehloran axis; this allows for an examination of the axis's spatial, economic, commercial, infrastructural, and institutional characteristics independently of generalized propositions regarding border economies. Second, to address the limitations inherent in generalizing the characteristics of border economies to the specific context of Ilam, the factors influencing economic development were identified – not “a priori,” but through a thematic analysis of qualitative data, followed by refinement and validation

via the Delphi method based on expert consensus regarding the region; thus, the finalized factors emerged from the actual conditions and unique characteristics of the study area. Third, given the limitations of previous studies in explaining the interrelationships between spatial structure, institutional capacity, and economic outcomes, this research – rather than claiming to test causal relationships – links these dimensions within an integrated strategy; by classifying factors within a SWOT framework and quantitatively assessing them using IFE and EFE matrices, it enables the simultaneous evaluation of internal capacities and constraints alongside environmental opportunities and threats. This assessment then serves as the basis for formulating a strategic framework for the economic development of the Ilam-Mehran-Dehloran corridor. Accordingly, this research focuses on the Ilam-Mehran-Dehloran functional corridor, aiming to formulate a context-sensitive analytical framework to elucidate economic development pathways for the border regions of Ilam Province. This framework conceptualizes economic development as the outcome of interactions between territorial assets and constraints, the region's position within domestic and cross-border networks, economic linkages with Iraq, and institutional and governance capacities, while viewing the border simultaneously as both a constraint on and a potential driver of development. This framework organizes the identified factors into a coherent strategic system to elucidate the mechanisms for activating border potentials and strengthening the region's institutional capacities and resilience. The research focuses not on presenting a fixed set of operational strategies, but rather on establishing a framework that, while reflecting the territorial, institutional, and geopolitical characteristics of the study area, can serve as a basis for analyzing and recalibrating development policies in other border regions, tailored to their specific conditions.

2. Theoretical foundations

The economic development of border regions is a complex, multidimensional phenomenon that cannot be explained solely by geographical proximity or a mere inventory of local capacities. Contemporary literature views the border as a spatial and relational entity that restricts, selects, or facilitates economic and social flows; its impacts depend on permeability, connectivity quality, and governance capacity.

Accordingly, understanding the economic development of the Ilam-Mehran-Dehloran axis requires shifting from single-scale, descriptive perspectives to a framework that simultaneously considers various spatial levels, from the international boundary line to direct contact points, domestic support hubs, and the provincial scale, alongside the general mechanisms of border economies. The theoretical foundations are organized into six sections: beginning with a multi-scale, functional definition of the border region, and proceeding to the structural aspects of economic development, complementary theoretical approaches, the specific characteristics of the Ilam-Mehran-Dehloran axis, the interplay between general aspects and the region's specific conditions, and finally, the research's analytical framework. Collectively, these sections establish the conceptual groundwork for identifying internal and external factors, interpreting SWOT findings, and formulating the proposed framework for the region's economic development.

2.1. The border region as a multi-scale and functional territory

Distinguishing between the border line, the border strip, the border city or county, the functional border region, and the border province is essential for establishing the theoretical foundations. The international border is the line where sovereignty is

exercised; the border strip is the immediate territory adjacent to it, subject to security or environmental restrictions; the border city or county is a unit that maintains direct contact with the border; A functional border region comprises a set of settlements, infrastructure, enterprises, and flows whose livelihoods are significantly influenced by the border; meanwhile, a border province represents a broader policy-making scale where the intensity of "border-ness" is not uniform. Thus, geometric proximity is necessary but is insufficient to define a border economic region.

In a functional definition, the border shifts from a static line to a network of relationships; for instance, goods might be registered in Mehran, financial services provided in Ilam, production carried out in Dehloran, and the final market located in Iraq or central provinces. Economic development analysis must account for this chain and these intertwined scales. Contemporary literature also views border regions as "interfaces" between economic and institutional systems, measuring the intensity of border-ness not merely by linear distance, but by patterns of commuting, trade, institutional disparities, and governance arrangements (Wong Villanueva et al., 2022; OECD, 2024; Paul et al., 2026).

In the present study, this distinction leads to the definition of five spatial levels:

Table 1. Differentiation of spatial levels

Spatial level	Definition and role	Position in research
Iran-Iraq international border line	Legal limit of sovereignty and point of transit regulation	Geopolitical and institutional context
Immediate border strip	Territory subject to security, environmental, and siting constraints	Influential setting, not an independent unit of analysis
Direct contact hubs	Mehran, Dehloran, and associated crossings and activities	Core of the border economy
Supporting internal hub	Ilam (as administrative and high-level service center)	Organizing link and connection to the national network
Ilam province	Scale of spatial planning, resource allocation, and inter-sectoral coordination	Macro-level policy and institutional environment

This definition resolves the ambiguity regarding the back-and-forth references between "Ilam" and "Ilam's border regions." Whenever the "study area" is mentioned hereafter, it refers to the Ilam-Mehran-Dehloran functional network; "province" denotes the scale of policymaking and the structural context; and "border hub" refers to Mehran, Dehloran, and the territories directly connected to the Iraqi border.

2.2. General logic or structural aspects of economic development in border regions

The general characteristics of border regions are not deterministic laws but recurring mechanisms whose effects vary depending on the type of border and the specific conditions of each region. Six mechanisms are of fundamental importance in analyzing economic development:

First is the “border effect.” Disparities in legal, monetary, tax, customs, and administrative systems disrupt market integration and increase transaction costs and uncertainty. Even with open borders, differences in standards, licensing requirements, and transport networks can create barriers equivalent to geographic distance. The intensity of this effect depends on border permeability, the quality of crossing points, regulatory stability, and institutional coordination (Capello et al., 2018; Medeiros et al., 2021; Chirodea et al., 2024).

Second is “peripheralization and agglomeration economies.” Core-periphery theory and New Economic Geography explain that firms and skilled labor tend to concentrate in locations with larger markets and stronger linkages. Peripheral border regions, especially those lacking adequate infrastructure, may become trapped in a cycle of small markets, low investment, and out-migration (Krugman, 1991; Pugh and Dubois, 2021). However, peripherality is not inevitable; improved connectivity or linkages with the neighboring country’s market can alter locational advantages.

Third is the concept of the “border as a resource.” Disparities in prices, wages, demand, language, culture, and regulations can generate opportunities for trade, tourism, specialized services, and knowledge exchange. Sohn (2014) demonstrates that a border becomes a resource when local actors can capitalize on these differences and establish collaborative networks. This advantage is not automatic; without infrastructure, trust, market information, and facilitating institutions, such disparities tend to result in smuggling or short-term fluctuations rather than productive investment.

Fourth is “network and scale dependency.” Border economies do not operate in a vacuum; enterprises rely on markets, suppliers, labor, financing, and public services, both domestically and, at times, within the neighboring country. Consequently, a border hub’s success cannot be measured solely by customs throughput; one must also assess how much value the region retains and how local production integrates with trade flows. Transport, warehousing, customs, and financial services constitute an integrated system, as isolated investments yield limited impact (Medeiros et al., 2021; OECD, 2024).

Fifth is “multi-level and cross-border governance.” Border region issues transcend the mandate of any single organization; customs, security, transportation, environmental management, municipal administration, industrial development, tourism, and

foreign trade each have separate authorities. A lack of coordination among them drives up transaction costs and complicates strategy implementation. Effective governance requires a clear institutional architecture, a shared agenda, sustainable resources, a division of responsibilities, monitoring indicators, and the participation of the private sector and local communities (Wong Villanueva et al., 2022; OECD, 2024).

The sixth aspect is “vulnerability and resilience.” An economy reliant on a single crossing point, market, or natural resource is fragile in the face of shocks. Horizontal diversification of agriculture, industry, services, tourism, and logistics, along with vertical diversification through processing and value-chain completion, are two primary pathways to mitigate this fragility. Resilience also has an institutional dimension: timely data, contingency planning, crisis coordination mechanisms, and the capacity for rapid policy adjustment enhance recovery capabilities (Hippe et al., 2024).

2.3. Complementary theoretical approaches

Core-periphery and new economic geography

These approaches explain the concentration of services and capital in the core and the marginalization of the periphery, highlighting Ilam’s poor connectivity and distance from major markets. However, a border region is not merely a periphery to the national core; proximity to the Iraqi market can alter its economic standing. Furthermore, the concentration of activity at a border crossing does not lead to sustainable development without backward and forward linkages and sufficient absorptive capacity. Therefore, analysis must incorporate cross-border relations and the quality of local institutions alongside the region’s distance from the core (Krugman, 1991).

The border as barrier, filter, and resource

A border can function as a total barrier, a selective filter, or an active interface, with these roles varying across different types of flows; for instance, the passage of pilgrims might be facilitated while small-business trade faces complex procedures, or formal exchange might grow even as local communities’ access to the resulting benefits remains limited. Consequently, “border openness” must be assessed separately for each specific flow and social group. A border-related advantage becomes sustainable only when short-term exchanges evolve into investment and value-added production (Sohn, 2014; Zhang et al., 2023).

Place-based development, endogenous development, and territorial capital

The place-based approach is a response to uniform, sectoral policies; it views development as the outcome of mobilizing a territory's tangible and intangible assets, including natural resources, location, infrastructure, skills, social networks, local identity, and institutional quality. This approach does not imply self-sufficiency; rather, it entails linking internal capabilities with external opportunities. Ilam's access to the Iraqi market becomes an advantage only when local producers can meet the necessary standards regarding quality, scale, packaging, financing, and logistics. The OECD (2025) highlights four conditions for effective place-based policy: targeting specific capacities and bottlenecks, ensuring policy coherence, implementing efficiently at the appropriate scale, and strengthening multi-level governance. This framework guards against two pitfalls: relying solely on physical investment and assuming that local capacity is sufficient without institutional support. Along the Ilam-Mehran-Dehloran corridor, endogenous development must be integrated with the Iraqi market, national capital, and the country's transportation network.

Collaborative governance and institutional capacity

A development strategy becomes actionable only when the responsible entity, resources, timeline, coordination mechanism, and evaluation indicators are clearly defined. Collaborative governance relies on interaction among the government, the private sector, academia, civil society organizations, and local communities; in border regions, this collaboration must span national, provincial, and local levels and, wherever possible, extend to institutions on both sides of the border. The OECD framework for border governance comprises four dimensions: institutional architecture, strategic planning, financing, and public engagement (OECD, 2024). For Ilam, this approach carries two implications: first, the multiplicity of organizations must give way to a clear division of labor; otherwise, institutional complexity itself becomes a barrier to development. Second, participation should not be confined to administrators or experts; combining statistical evidence, economic actors' views, residents' experiences, and environmental assessments enhances the credibility of strategies.

Economic resilience and diversification

Regional resilience complements growth theory by examining how the local economy performs against

border closures, regulatory changes, declining demand from Iraq, security crises, drought, or dust storms. From this perspective, the extent to which the local economy relies on a limited range of resources and markets is a key determinant of its vulnerability to shocks. Consequently, economic diversification and the deep value chains emerge as vital tools for mitigating vulnerability. Thus, a border development strategy must assess both impacts on standard growth and performance under disruption scenarios, ensuring that short-term surges in traffic or exports are not mistakenly equated with sustainable development (Hippe et al., 2024; OECD, 2024).

2.4. The unique nature of economic development along the Ilam-Mehran-Dehloran axis

Ilam's distinct character arises from a combination of factors. First, the political and security history of the Iran-Iraq border, along with war experience, has shaped a defensive perspective on the border zone, as well as the patterns of population settlement and infrastructure deployment. Second, religious and cultural ties, combined with Mehran's role in pilgrim transit, generate significant yet seasonal demand. Third, oil and gas resources and agricultural potential in Mehran and Dehloran offer opportunities to expand production and downstream industries; however, without local value chains, employment and value added may be concentrated outside the region. Fourth, while Iraq serves as a nearby market for Iranian goods and services, its political, regulatory, and currency fluctuations introduce uncertainty. Fifth, the concentration of administrative, educational, and healthcare services in Ilam city could facilitate coordination, yet poor connectivity threatens to widen the gap between the provincial center and border hubs.

The provincial spatial planning document acknowledges this configuration, assigning Ilam roles in agriculture, agro-processing, oil and gas, transportation, transit, trade, customs services, and tourism. Mehran and Dehloran are prioritized for multimodal transport, commerce, logistics, and energy sectors (Supreme Council of Land Planning, 2020). Consequently, the economic strategy must balance leveraging the border location and addressing security and environmental considerations.

Local studies have identified interrelated challenges: unemployment, out-migration, low investment, a lack of supporting industries, inadequate transportation

networks, weak university-industry linkages, management instability, and cultural constraints (Piri, 2020; Omid, 2022; Yeganeh et al., 2023). These factors indicate three gaps in Ilam: a connectivity gap between resources and markets, an absorption gap between transit flows and the local economy, and a governance gap among various agencies. Therefore, development strategies must target these three gaps.

2.5. The relationship between general aspects and the specific characteristics of Ilam

To connect the general and specific levels, each characteristic of Ilam must be linked to a theoretical mechanism and a strategic implication. The following table illustrates this connection.

Table 2. Assessment and mechanisms of territorial development in border areas

General border area mechanism	Specific manifestation in the Ilam-Mehran-Dehloran corridor	Analytical issue	Strategic implication
Barrier effect and transaction costs	Border procedures, a multiplicity of governing bodies, and fragmented transport and service networks	Do the time, cost, and uncertainty associated with transactions negate the advantage of proximity to Iraq?	Integration of border services, single window, completion of connectivity, and procedural stability
The border as a resource	the Iraqi market, religious tourism, and disparities in demand and pricing	what share of trade value remains within the region?	Developing services and export-oriented production, and increasing the retention of local value
Center-periphery and agglomeration	Concentration of premium services in Ilam versus service deficiencies in outlying hubs	Does Ilam act as a support base, or does it siphon resources from the border regions?	Networking complementary roles and the targeted distribution of specialized services
Territorial capital and place-based	Oil and gas, agriculture, human resources, culture, and geopolitical location	Why have resources not translated into value chains and sustainable employment?	Downstream industries, processing, skills, financing, and enterprise linkages
Multi-level governance	Multiplicity of agencies and the dependence of decisions on the national level and relations with Iraq	Which entity is responsible for strategy coordination and monitoring?	Permanent coordination structure, division of responsibilities, budget, and shared indicators
Regional resilience	Dependence on the Mehran border, the Iraqi market, seasonal flows, and environmental hazards	How does the economy perform against border closures or demand shocks?	Diversification, alternative routes and markets, scenario planning, and crisis management

Source: Research findings

This table demonstrates that Ilam's unique characteristics do not conflict with the general mechanisms governing border regions; rather, they represent specific, localized manifestations of those mechanisms. For instance, reliance on the Iraqi market is a local expression of the general logic of border-related advantages and vulnerabilities; the concentration of services in the city of Ilam is a specific form of the intra-provincial center-periphery relationship; and the Mehran Logistics Park and Dehloran dry port serve as spatial responses to the universal challenges of connectivity and transaction costs. This analysis allows the study's findings to transcend the local description without overlooking the distinct characteristics of Iran's other border regions.

2.6. Research analytical framework and its implications for strategy formulation

The economic development of a border region results from the interaction of four layers: general border structures, local assets and constraints, the region's relational position within domestic and cross-border networks, and institutional capacity. These layers influence outcomes such as employment, income, productivity, investment, and resilience through mechanisms including the reduction of transaction costs, value chain deepening, enhanced absorptive capacity, diversification, and strengthened governance. While SWOT serves as a primary tool for organizing evidence, it is not, in itself, a causal theory or a sufficient criterion for strategy selection. The evaluation of any strategy must be grounded in six

criteria: theoretical consistency, alignment with the scale of intervention, the presence of an implementing body and resources, distributional impacts, resilience to shocks, and monitorability.

Expert opinion constitutes one layer of evidence and must be cross-referenced with spatial and economic statistics, spatial planning documents, business data, resident experiences, and comparative studies (OECD, 2024; OECD, 2025).

The applicability of this framework to other border regions relies on “conditional analytical transfer”; this means that while the analytical mechanisms and questions are generalizable, the specific combination of factors and priorities must be recalibrated based on the border type, the neighboring country’s structure, distance from national centers, the production base, demographic composition, and the institutional capacity of each region. Overall, the study’s theoretical foundations indicate that the economic development of border regions is neither solely the result of local capacities nor merely a function of geographical location; rather, it emerges from the interaction of four structural layers: the general mechanisms of border economies (barrier effects, the border as a resource, center-periphery dynamics, network interdependence, multi-level governance, and resilience); local assets and constraints; the region’s relational position within domestic and cross-border networks; and institutional and governance capacity. These layers influence development outcomes, such as sustainable employment, local value added, investment, and resilience, through mechanisms including reducing transaction costs, deepening value chains, enhancing capacity to capture benefits from cross-border flows, diversification, and the strengthening of multi-level governance. Regarding the Ilam-Mehran-Dehloran axis, this framework enables an analytical distinction between “local,” “network,” and “cross-border” factors, preventing the border region from being reduced to a mere provincial administrative zone or a simple customs crossing point. Accordingly, the SWOT analysis in this study serves not as a causal theory, but as a tool for organizing evidence and a starting point for determining strategic orientation (particularly the relative priority of WO strategies); meanwhile, the final evaluation of any strategy requires simultaneous consideration of theoretical consistency, the scale of intervention, the implementing authority, distributional effects, resilience against shocks, and monitorability. This theoretical logic provides the necessary basis for analyzing empirical findings and

formulating the proposed framework for the economic development of border regions in Ilam Province.

3. Literature review

Research on border region development in Iran has gradually expanded since the 2000s, focusing primarily on structural challenges, spatial inequality, and the role of the border in the regional economy. Studies such as Parnian et al. (2017), using a spatial planning approach, have emphasized the need to consider natural constraints, geographical location, and cross-border capacities simultaneously. Rigi et al. (2020, 2021) demonstrated that the border can serve as a driving force for the livelihoods of border residents, although inadequate infrastructure and geographical isolation remain barriers to development. Focusing on the Iran-Iraq border, Piri (2020) highlighted obstacles related to tariffs, logistics, and security, as well as the lack of integrated management. Furthermore, Darabi and Fanni (2021) identified drivers of regional development in Ilam; Amanpour and Mohammadi (2021) analyzed spatial inequality within the province; and Janparvar et al. (2021, 2023) categorized border-related parameters influencing the security and development of border cities. In recent years, Mohammadpanahi et al. (2023), Mirzaei et al. (2024), and Esmatyar and Malekpour (2025) have emphasized regional competitiveness, shifts in the center-periphery model, and the role of collaborative governance in the balanced development of border provinces. Despite these studies, an integrated framework tailored to Ilam’s specific conditions is still needed.

At the international level, the research background begins with classical location theories. Christaller (1993), through Central Place Theory, provided a foundation for understanding the positioning of border regions. Lösch (1940) and Friedman (1996) highlighted the negative impacts of political borders and the core-periphery model. Hansen (1975, 1976, 1978) categorized the positive and negative attributes of border regions and emphasized the necessity of specific border policies. In recent decades, research focus has shifted toward resilience, cross-border cooperation, and sustainable development. Prokkola (2019) examined the resilience of European Union borders; Borovskaya et al. (2019) identified the sustainable development of border regions as a key issue; and Zhang et al. (2023) analyzed the impact of border-opening policies on the economies of China’s border regions. Su et al. (2024) outlined the distinctive characteristics of border city development – namely

rapid growth, industrial structure optimization, open economies, and cross-border cooperation. Wendt (2021), Hippe et al. (2024), and Mousavi (2024) have also focused on security, environmental, and resilience challenges in the context of globalization and pandemics. However, these studies have paid less attention to indigenous models for the border regions of developing countries characterized by complex geopolitical conditions, such as proximity to Iraq and the impact of sanctions.

Despite the expansion of studies on border region development, much of the existing literature analyzes the "border region" at a single scale, such as a border county, province, or crossing point. However, a border region does not necessarily coincide with a single administrative unit; flows of production, trade, services, transportation, and investment may emerge across varying scales. From this perspective, a limitation of the current literature is the insufficient attention paid to the linkages among the immediate border contact zone, inland supporting settlements, and cross-border economic and communication networks. Regarding Ilam Province specifically, previous studies have largely focused on its border location, spatial inequality, economic potential, border trade, or regional development drivers; yet, the systematic interconnection between the Mehran border crossing, the production and service hubs of Mehran and Dehloran, the service center of Ilam, and the economic network linked to Iraq has rarely been conceptualized as a "functional border region." Consequently, the research gap addressed here is not merely the failure to identify development factors, but the absence of a multi-scalar framework to explain how border flows are transformed into value, employment, and investment within the region's spatial network. Accordingly, this study defines the area of inquiry not as the entire province or merely the strip adjacent to the border line, but as the Ilam-Mehran-Dehloran functional network, wherein each hub is analyzed based on its distinct role within the border economic system.

This study is innovative, compared to existing literature on border region development in Iran and globally, in three dimensions: methodological, substantive, and practical. While much domestic research (Piri, 2020; Mohammadpanahi et al., 2023; Mirzaei et al., 2024) has primarily focused on the descriptive analysis of challenges or the examination of isolated economic, security, or spatial dimensions, and international studies have largely relied on the successful

experiences of the European Union and China (Su et al., 2024; Zhang et al., 2023), a review of the literature reveals a lack of clear consensus regarding the prioritization of development strategies tailored to the local context of Ilam Province. Despite a shared emphasis on border potential, infrastructure, border governance, cross-border cooperation, and the role of special economic zones, no unified approach exists for this prioritization. The findings of the present study, regarding the identification of strengths, weaknesses, opportunities, and threats concerning the economic development of Ilam's border regions, are expected to align with the results of studies by Piri (2020), Mohammadpanahi et al. (2023), Mirzaei et al. (2024), Zhang et al. (2023), and Su et al. (2024), as these works also underscore the importance of transport infrastructure, integrated border management, cross-border cooperation, and the utilization of the economic potential of border regions. However, the primary distinction of the present study lies in the fact that, unlike previous studies that largely focused on identifying challenges or analyzing isolated dimensions of development, this research employs a combination of complementary methods (thematic analysis, the Delphi technique, IFE and EFE matrices, SWOT analysis, and the QSPM matrix). By doing so, it not only identifies key factors of economic development but also prioritizes development strategies and proposes an operational model tailored to the specific conditions of Ilam Province.

4. Research methodology

This study is developmental-applied in purpose and employs a mixed-methods design (qualitative-quantitative) approach, with a sequential exploratory strategy. It aims to identify influential factors and formulate and prioritize appropriate strategies for the sustainable economic development of the border regions in Ilam Province. The research was conducted in two sequential phases: qualitative and quantitative. The findings from the qualitative phase served as the basis for introducing factors into the quantitative strategic analysis stage. In the qualitative phase, factors and components related to the economic development of border regions were extracted through semi-structured interviews with experts, following the Braun and Clarke (2006) thematic analysis framework; these were then screened and finalized over three consecutive rounds using the Delphi technique. Participants in this stage included experts from Ilam Province, including executive

managers, Ilam University faculty members, and researchers with at least one published paper on the economic development of border regions, selected via purposive sampling. Interviews continued until theoretical saturation was reached with 15 individuals; the group included 10 men and five women, with 11 having less than 10 years of work experience and four having more than 11 years, while educational backgrounds included four individuals with master's degrees and 11 with doctoral degrees. Following thematic analysis and code and theme extraction, inter-coder agreement was assessed to evaluate the coding process's reliability and ensure the results' stability and reproducibility, utilizing Holsti's coefficient, Scott's Pi, Cohen's Kappa, and Krippendorff's Alpha. The use of inter-coder agreement indices is considered a key criterion for assessing reliability in content analysis and qualitative data analysis (Krippendorff, 2004). Subsequently, through three consecutive rounds of the Delphi method, the extracted factors were evaluated and revised based on their importance and suitability; upon reaching expert consensus, a final set of 62 factors was identified, screened, and classified into four categories: strengths, weaknesses, opportunities, and threats (Niederberger and Springer, 2020).

In the quantitative phase, the finalized factors were incorporated into researcher-designed questionnaires and administered to a statistical population comprising economic managers from the border regions of Ilam Province and university professors specializing in economics and border-region development. Given the undefined size of the statistical population and the reliance on expert judgment to complete the internal factor evaluation (IFE) and external factor evaluation (EFE) matrices, purposive sampling was employed among qualified and accessible individuals; thirty managers and professors were selected as respondents. This sample size aligns with standard practice in strategic research based on expert judgment, which recommends a minimum of thirty participants to ensure reliable quantitative analysis (Roscoe, 1975). Since the unit of analysis is the "functional border region," the selection of participants and the interpretation of factors were not based solely on residency or employment within a specific administrative unit; rather, consideration was given to the participants' familiarity with and connection to the economic, managerial, and spatial mechanisms of the Ilam-Mehran-Dehloran axis and its relationship with the Iraqi border. Within this framework, Mehran and Dehloran were viewed as hubs of direct border contact

and activity, Ilam as the administrative, service, and support center, and the Iraqi border as the setting for the emergence of cross-border flows. During the strategic analysis stage, the IFE and EFE matrices were utilized to assess the internal and external environments and determine the region's strategic position; within the context of environmental analysis, these tools facilitate the identification and evaluation of resource capabilities, internal shortcomings, environmental opportunities, and external threats (Thompson et al., 2007). To calculate the IFE and EFE matrices, weights reflecting relative importance were first assigned to each internal and external factor based on expert judgment, and the sums of the weights for internal and external factors were normalized separately. Subsequently, each factor was evaluated on a four-point scale; in the IFE matrix, scores indicated the factor's status from major weakness to major strength, while in the EFE matrix, they reflected the region's response level to opportunities and threats, ranging from poor to excellent. By multiplying each factor's weight by its score and summing the weighted scores, final IFE and EFE scores were obtained and used in the analysis phase to determine the region's strategic position. Following the calculation of IFE and EFE scores, the region's strategic position was determined using the IE matrix; four strategic groups (SO, WO, ST, and WT) were formulated based on the SWOT framework, and given the strategic position derived from the IE matrix, WO strategies were selected as the dominant and priority orientation. Finally, to determine the relative priority of the WO strategies and reduce the strategy selection process's reliance on purely qualitative judgment, the quantitative strategic planning matrix (QSPM) was employed; for this purpose, the weights of internal and external factors derived from the IFE and EFE matrices were utilized in the strategy evaluation, and after determining the attractiveness score (AS) of each factor for each strategy, the total attractiveness score (TAS) was calculated, allowing the WO strategies to be ranked based on their aggregate TAS values. Thus, the methodological process of the research was conducted in a sequential and integrated manner, spanning from the identification of factors in the qualitative phase, along with validation and the achievement of expert consensus, to the assessment of the internal and external environments, determination of strategic positioning, formulation of SWOT strategies, and finally, the prioritization of selected strategies using QSPM. The research implementation process was carried out in eight

consecutive stages:

Phase 1: Review of theoretical foundations and documents

In the first step, the theoretical literature on the economic development of border regions, domestic and international studies, spatial planning documents, development plans, and laws and documents related to Ilam Province were reviewed to develop the research's preliminary theoretical framework.

Phase 2: Qualitative data collection

Semi-structured interviews were conducted with experts in border region development, executive managers, faculty members, and researchers. Purposive sampling continued until theoretical saturation was achieved.

Phase 3: Thematic analysis

Interview transcripts were analyzed using the thematic analysis method proposed by Braun and Clarke (2006), and basic, organizing, and global themes were extracted. To enhance reliability, inter-coder agreement was assessed using Holsti's, Scott's Pi, Cohen's Kappa, and Krippendorff's Alpha coefficients.

Phase 4: Validation of qualitative findings

The extracted factors were presented to experts over three rounds of the Delphi technique to reach consensus and compile the final list of strengths, weaknesses, opportunities, and threats.

Phase 5: Converting qualitative findings into a quantitative tool

Based on the final SWOT factors, internal factor evaluation (IFE) and external factor evaluation (EFE) matrix questionnaires were designed and distributed to managers and specialists in border region economic development.

Phase 6: Strategic analysis

After calculating the weighted scores for internal and external factors, the region's strategic position was determined within the IE matrix, and four groups of strategies (SO, WO, ST, and WT) were derived.

Step 7: Prioritizing strategies

The identified strategies were evaluated using the quantitative strategic planning matrix (QSPM) and prioritized based on their total attractiveness score (TAS) (Zarrabi and Mahboubfar, 2013; Meshkini et al., 2016).

Step 8: Interpretation and formulation of the strategic model

In the final stage, the qualitative and quantitative analyses results were interpreted in an integrated manner and aligned with the theoretical foundations of border region economic development, prior studies, and the specific characteristics of the Ilam-Mehran-Dehloran corridor. The output of this stage was the formulation of final strategies and the presentation of an analytical framework applicable to other border regions, while accounting for the institutional, spatial, and economic differences of each region.

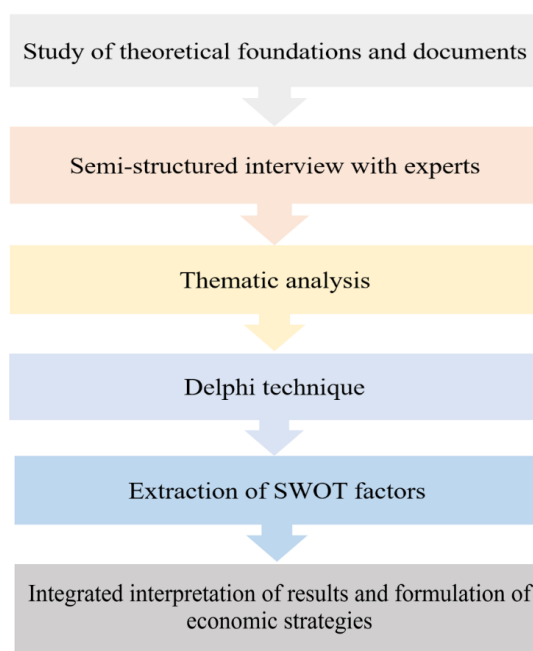


Figure 1. Research flow chart

4.1. Study area

Ilam Province is located in western Iran within the Zagros region, bordering Kermanshah and Lorestan provinces to the north and east, and Khuzestan Province to the south. A key spatial characteristic of the province, and a central focus of this research, is its proximity to the international border between Iran and Iraq; the province shares a border of approximately 425 kilometers with Iraq and connects to Iraqi trade, pilgrimage, and economic networks through various border crossings, most notably the Mehran border. In terms of spatial structure, the Ilam-Mehran-Dehloran axis and its connection to the Iraqi border constitute a

primary area of interest for this study. Within this framework, Mehran serves as the province's most important gateway to Iraq, playing a pivotal role in trade, exports, pilgrimage, and cross-border flows, while Dehloran is significant due to its production capacities, resources, and regional connectivity. Consequently, the province's location adjacent to the international border, its integration into domestic and cross-border networks, and the strategic importance of the Ilam-Mehran-Dehloran axis provide the spatial rationale for selecting this area to examine the economic development of border regions.

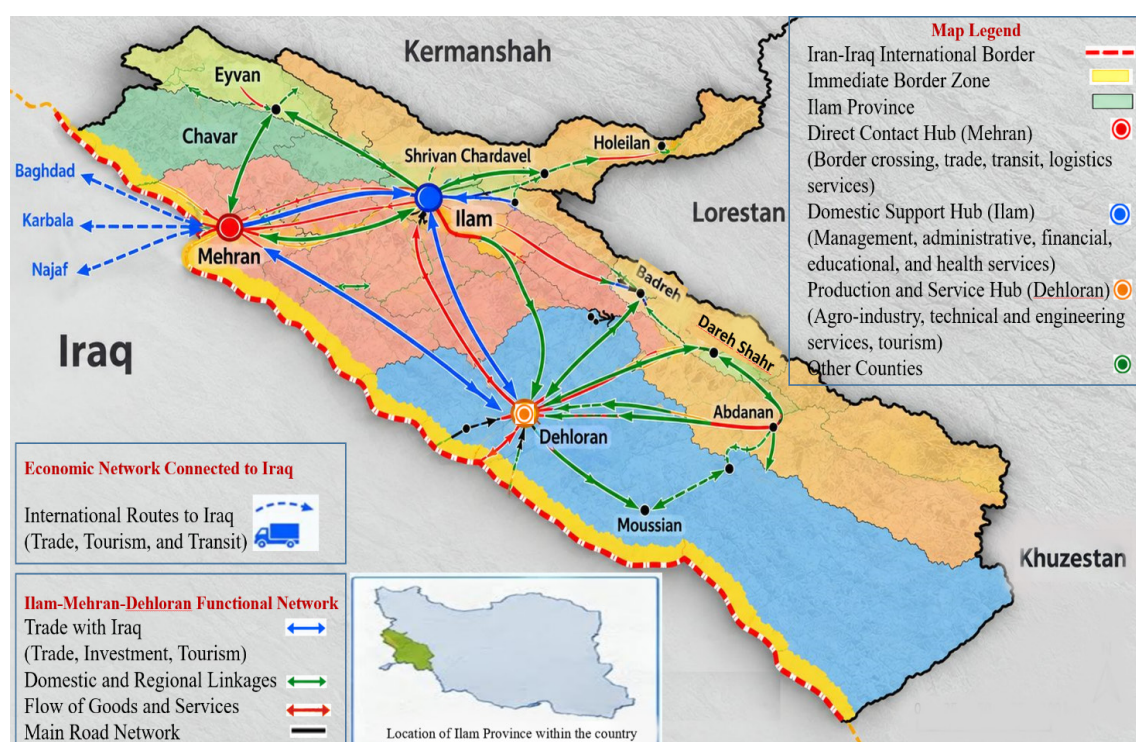


Figure 2. Spatial structure and functional network of the Ilam-Mehran-Dehloran border region and the location of Ilam Province within the country

5. Discussion and analysis of results

The analysis process in this study began with a review of theoretical foundations, background literature, and regional documents to establish an initial conceptual framework and a theoretical sensitivity to the characteristics of border regions, such as transaction costs, network connectivity, cross-border flows, territorial capacities, and economic resilience. However, the theoretical foundations served only as an interpretive framework rather than a direct source for deriving codes related to the specific situation of Ilam. Initial codes were extracted directly from expert

narratives, reflecting their perceptions and experiences regarding the economic development of Ilam's border regions. Following refinement, the codes were organized into basic, organizing, and global themes. The criteria for selecting themes included relevance to the research problem, the ability to explain dimensions of border economic development, and alignment with the specific conditions of Ilam. The goal of the thematic analysis was not to compile every topic raised, but rather to construct a coherent set of factors influencing the region's economic development. Subsequently, the extracted factors were presented to experts over

three rounds of the Delphi technique to evaluate their importance and suitability. Factors lacking consensus or sufficient significance were either eliminated or modified, and a final set was selected for strategic analysis. In the final stage, the selected factors were classified within a SWOT framework. Categorizing a factor as a strength, weakness, opportunity, or threat did not imply definitive proof of that characteristic's existence in the region; rather, it represented an analytical classification based on the factor's internal or external nature and its role in the region's economic development. Given the study's multi-scale framework, the factors identified through thematic analysis cannot be viewed merely as a collection of general characteristics of Ilam Province. These factors emerge at various spatial levels within the functional border region, and their impact on economic development manifests through the interconnections between these levels. Some factors relate directly to the border contact point and the operations of the Mehran crossing; others pertain to the productive and

territorial capacities of Dehloran and the service, administrative, and specialized capacities of Ilam; while a third group possesses a networked or trans-border nature, depending on the quality of connectivity between these hubs and their links to Iraqi markets and economic institutions. Consequently, the significance of each factor is assessed not merely by its presence in a specific location, but by its position within the region's functional network and its capacity to forge links between cross-border flows and the local economy.

5.1. Thematic analysis results

To identify the factors influencing the economic development of border regions in Ilam Province, a thematic analysis was conducted using the six-step approach developed by Braun and Clarke (2006). Four complementary indicators were calculated to assess the quality of the qualitative analysis. Table 3 presents the results for these indicators.

Table 3. Reliability indicators for qualitative analysis

Indicator	Calculated value	Acceptable threshold	Status
Holsti's coefficient (PAO)	0.887	$0.70 \geq$	Excellent
Scott's Pi	0.755	$0.70 \geq$	Satisfactory
Cohen's Kappa	0.725	$0.60 \geq$	Satisfactory
Krippendorff's Alpha	0.817	$0.70 \geq$	Excellent

Four quantitative criteria were employed to assess credibility, transferability, confirmability, and dependability: Holsti's coefficient, Pi-Scott's coefficient, Cohen's kappa, and Krippendorff's alpha. The level of agreement among experts was calculated using Holsti's coefficient (PAO) – or “percentage of observed agreement” – yielding a value of 0.887, which is significant. Given criticisms of Holsti's method, Pi-Scott's index was also calculated, resulting in a value of 0.755. The third index used to assess the reliability of qualitative research is Cohen's kappa; in this study, the value obtained was 0.725. Finally, Krippendorff's alpha was utilized, with an estimated value of 0.817.

Extracted themes

The thematic analysis process begins when the analyst identifies semantic patterns and potential interest topics. This analysis involves a continuous back-and-forth movement between the dataset, the coded data, and the emerging analysis. Analysis writing begins at the very first stage. Generally, there is no single, unique

way to initiate a thematic analysis study. Thematic analysis is a recursive process that moves back and forth between the aforementioned stages. The six stages of thematic analysis, based on the approach proposed by Clarke and Braun (2006), are described below.

Step 1. Familiarization with the data: to understand the data's depth and breadth, the researcher must immerse themselves in it. Immersion typically involves “repeatedly reading the data” and reading actively (i.e., searching for meanings and patterns).

Step 2. Generating initial codes: this stage begins once the researcher has read the data and become familiar with it. It involves generating initial codes from the data. Codes represent a feature of the data that the analyst finds interesting. Coded data differ from units of analysis (themes). Coding can be done manually or with software; in this study, software was used. Following the six stages of thematic analysis, 102 initial codes were extracted.

Step 3. Searching for selective codes (basic themes): this stage categorizes codes into selective codes and organizes summaries of the coded data. Essentially, the researcher begins analyzing the codes and considers how different codes might be combined to form an overarching theme. At this stage, the researcher discards incomplete, irrelevant, or duplicate codes to arrive at the final set of selective codes.

Step 4. Formation of constructive themes: this stage begins when the researcher has generated a set of themes and proceeds to review them. It involves two phases: reviewing and refining themes, and shaping sub-themes. The first phase entails reviewing the coded extracts. The second phase considers the validity of the sub-themes in relation to the dataset. Through this process, researchers arrived at the constructive themes.

After refining and eliminating redundant or irrelevant codes, a total of 62 components were ultimately identified across four main categories: strengths, weaknesses, opportunities, and threats. Table 5 presents these themes within the SWOT framework. Table 5 indicates that, despite Ilam Province's significant potential, structural constraints hinder the full use of these capacities. The greater number of weaknesses (21 components) than strengths (14 components), along with 15 serious threats, underscores the depth of the province's structural

challenges. The most significant weaknesses identified include the lack of unified commercial management, the absence of integrated management at the Mehran border, and a lack of core industries. Conversely, 13 environmental opportunities, particularly major national projects (such as the nationwide rail connection and the East-West corridor) and cross-border cooperation, have created a strategic window to move beyond the current situation.

5.2. Delphi technique results

In this study, the "importance" of factors in the Delphi process refers to each factor's significance regarding its potential role and impact on the economic development of Ilam Province's border regions, specifically focusing on the Ilam-Mehran-Dehloran functional axis and its cross-border economic relations with Iraq. Consequently, experts were not asked about the general or independent importance of each factor; rather, they were requested to evaluate the significance of each identified factor in relation to the study's core issue: the economic development of the border region in question. Accordingly, a specific Delphi evaluation scale was designed to assess factor importance in this context, and expert responses served as the basis for screening and refining the factors.

Kendall's coefficient of concordance was used to measure the level of consensus among the experts.

Table 4. Kendall's coefficient of agreement

Stage	Number of input indices	Excluded indicators	Kendall's coefficient of concordance (W)	Significance level	Consensus status
Round 1	102	40	–	–	Initial screening
Round 2	62	0	0.860	0.000	Moderate consensus
Round 3	62	0	0.887	0.000	Strong consensus

Based on the results in Table 4, the Kendall coefficient of agreement was 0.860 in the second Delphi round and 0.887 in the third round, indicating increased consensus among the experts in the third round. Both coefficients were statistically significant. Furthermore, a comparison of the results from the two rounds

revealed no significant change in the mean scores of the items between the second and third rounds. Consequently, the third round's results were adopted as the final basis for expert consensus, and the confirmed factors were utilized for subsequent stages of the analysis.

Table 5. Integrated results of thematic analysis, the Delphi technique, and internal and external factor evaluations (IFE and EFE)

Code	Initial theme (thematic analysis)	Constructing theme	Weight (Delphi)	Score (IFE/EFE)	Weighted score
Strengths (S)	Border location facilitating trade with Iraq and access to the Mediterranean	Strengths	0.035	4	0.14
	Border location facilitating pilgrimage and tourism exchanges	Strengths	0.03	4	0.12
	Mehran border crossing for the export of goods and technical-engineering services	Strengths	0.035	4	0.14
	Mehran Special Economic Zone	Strengths	0.035	3	0.105
	International customs capabilities	Strengths	0.03	3	0.09
	Export potential for agricultural products	Strengths	0.035	4	0.14
	Favorable water and soil resources	Strengths	0.03	3	0.09
	Organic product production	Strengths	0.025	3	0.075
	Oil and gas resources	Strengths	0.035	4	0.14
	Non-metallic mineral deposits	Strengths	0.025	3	0.75
	Potential for downstream petrochemical industries	Strengths	0.035	4	0.14
	Nature, cultural, and religious tourism	Strengths	0.03	3	0.09
	Handicrafts and hand-woven carpets	Strengths	0.02	4	0.06
	Potential to attract foreign investment	Strengths	0.03	3	0.09
	Sum of strengths		0.455		1.355
Weaknesses(W)	Lack of unified business management	Weaknesses	0.04	1	0.04
	Absence of integrated management at the Mehran border	Weaknesses	0.04	1	0.04
	Border closures on specific occasions	Weaknesses	0.03	2	0.06
	Absence of consulates general	Weaknesses	0.03	1	0.03
	Lack of follow-up by the Iraqi consulate in Ilam	Weaknesses	0.03	1	0.03
	Dual tariff systems	Weaknesses	0.03	2	0.06
	Higher fees at the Mehran border	Weaknesses	0.03	2	0.06
	Export bans on certain goods	Weaknesses	0.03	2	0.06
	Shortage of loading and unloading space	Weaknesses	0.03	1	0.03
	Shared transit and export areas	Weaknesses	0.025	2	0.05
	Shortage of customs equipment and gates	Weaknesses	0.03	1	0.03
	Unfamiliarity with foreign market regulations	Weaknesses	0.03	2	0.06
	Failure to meet standards	Weaknesses	0.03	2	0.06
	Poor export packaging	Weaknesses	0.03	2	0.06
	Foreign payment issues	Weaknesses	0.035	1	0.035
	Lack of currency exchange channels with Iraq	Weaknesses	0.035	1	0.035
	Absence of core industries	Weaknesses	0.035	1	0.035
	Lack of a production chain	Weaknesses	0.035	1	0.035
	Industrial obsolescence	Weaknesses	0.03	2	0.06

Code	Initial theme (thematic analysis)	Constructing theme	Weight (Delphi)	Score (IFE/EFE)	Weighted score
Weaknesses(W)	Weak entrepreneurship	Weaknesses	0.03	2	0.06
	Weak private sector presence	Weaknesses	0.03	2	0.06
Sum of weaknesses			0.545		0.925
Total IFE score			1.000		2.28
Opportunities (O)	Establishing a special economic zone	Opportunities	0.045	4	0.18
	Creating bilateral special border zones	Opportunities	0.04	4	0.16
	Establishing the Dehloran border market	Opportunities	0.035	3	0.105
	Coordination between Iranian and Iraqi ministries	Opportunities	0.04	3	0.12
	Nationwide rail connection	Opportunities	0.045	4	0.18
	East-West corridor	Opportunities	0.045	4	0.18
	Developing arterial roads	Opportunities	0.04	3	0.12
	Exporting medical services	Opportunities	0.035	3	0.105
	"Atabat" pilgrimage tourism	Opportunities	0.04	4	0.16
	Commissioning the Simareh Dam	Opportunities	0.035	3	0.105
	Rural gas supply	Opportunities	0.03	3	0.09
	Agricultural water supply networks	Opportunities	0.035	3	0.0105
	Showcasing role models among entrepreneurs and rural women	Opportunities	0.03	3	0.09
Sum of opportunities			0.495		1.6
Threats (T)	Sanctions	Threats	0.045	1	0.045
	Instability in Iraq	Threats	0.045	1	0.045
	Interplay between security and the economy	Threats	0.04	2	0.8
	Dust storms	Threats	0.04	2	0.8
	Desertification	Threats	0.035	2	0.7
	Water resource pollution	Threats	0.035	2	0.7
	Budget cuts	Threats	0.04	2	0.8
	Oil price fluctuations	Threats	0.04	2	0.8
	Decline in the bitumen market	Threats	0.035	2	0.7
	Youth migration	Threats	0.045	1	0.045
	Negative population growth	Threats	0.04	1	0.4
	Shrinking workforce	Threats	0.04	1	0.4
	Pilgrim and transit traffic	Threats	0.035	2	0.7
	Deterioration of roads	Threats	0.035	2	0.7
	Competition from neighboring provinces	Threats	0.04	2	0.8
Sum of threats			0.505		0.935
Total EFE score			1.000		2.54

- Stage 1 (thematic analysis and extraction of SWOT factors): initial factors were derived from expert interviews and thematic analysis (following the Braun and Clarke approach). The table identifies the initial and constituent themes for each factor and categorizes them into strengths, weaknesses, opportunities, and threats. This table served as the foundation for all subsequent analyses and did not involve any weighting or scoring.
- Stage 2 (Delphi technique): the extracted factors were evaluated over three Delphi rounds aimed at achieving expert consensus. In many Delphi studies, the process concludes if the difference between the mean responses of round n and round $n+1$ is less than 0.2 (Cheng and Lin, 2002). Table 5 presents the final weights (relative importance) established after the Delphi consensus (in the third round) under the column "Weight (Delphi – relative importance post-consensus)." These weights reflect the relative importance of each factor within the framework of the Ilam-Mehran-Dehloran axis economic development.

- Stage 3 (IFE and EFE matrices): the final Delphi weights were adopted as the weights for each factor. Subsequently, a score from 1 to 4 was assigned to each factor (from major weakness to major strength for internal factors, and from weak response to excellent response for external factors). Table 5 displays the scores for internal factors (IFE) and external factors (EFE) in a shared column. The total weighted scores are 2.28 for the IFE matrix (derived from Strengths: 1.355 and Weaknesses: 0.925) and 2.54 for the EFE matrix (derived from Opportunities: 1.6 and Threats: 0.935).

To determine the organization's position, the scores obtained from the internal factor evaluation (IFE) and external factor evaluation (EFE) matrices must be plotted on the vertical and horizontal axes; this identifies the organization's standing and enables the formulation of appropriate strategies. This matrix, which aligns with the SWOT framework and identifies suitable strategies for the organization, is presented in Figure 3.

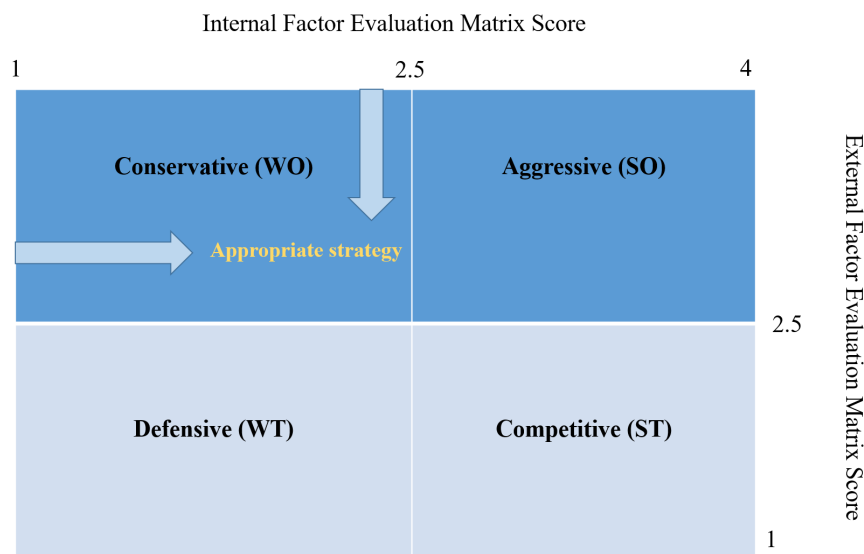


Figure 3. Internal-external matrix analysis

The FE and EFE matrices indicated that the region's internal and external environmental conditions fall within a mid-range position, with a weighted IFE score of 2.28 and a weighted EFE score of 2.54. These results demonstrate that while the region possesses exploitable capacities and opportunities, it also faces significant constraints and threats. Consequently, the IFE and EFE findings served as the basis for assessing the general situation and as input for the strategy formulation phase. WO strategies were identified as

the dominant and appropriate approach for the region's current status, and specific strategies corresponding to this position were subsequently identified and prioritized. However, this WO positioning should not be viewed as static or immutable; the strategic position derived from the SWOT analysis reflects conditions at the time of the study and may change based on management practices, policy implementation, and shifts in the region's capacities and constraints. Thus, the effective

implementation of WO strategies and the targeted utilization of existing opportunities could mitigate internal weaknesses and facilitate the region's gradual transition toward an SO position; conversely, the persistence or exacerbation of existing weaknesses, coupled with a failure to capitalize on opportunities, could heighten the region's vulnerability and drive it toward a WT position. Accordingly, the SWOT output in this study is interpreted not as a definitive blueprint for the region's future, but as a strategic assessment of the current situation and a starting point for policymaking.

5.3. Proposed approach for the economic development of Ilam Province's border regions

Findings from the SWOT analysis indicated that the economic development of Ilam Province's border regions cannot be reduced to a single factor or a specific policy measure; rather, its realization requires an interplay between the region's internal capacities, existing constraints, opportunities arising from its border location, and environmental conditions affecting the area. Accordingly, the derived strategies were organized into four orientations (SO, WO, ST, and WT) to provide a coherent framework for outlining the region's economic development paths by linking internal and external factors.

Using strengths to capitalize on opportunities

SO1. Developing an export cluster for agricultural and organic products by leveraging the Mehran border, the Iraqi market, and establishing border markets.

SO2. Attracting foreign investment in oil, gas, mining, and downstream petrochemical industries by utilizing the Mehran Special Economic Zone.

SO3. Developing pilgrimage and leisure tourism (the "Atabat" route) by capitalizing on the border location and transport infrastructure.

SO4. Transforming Ilam into a logistics hub for western Iran by relying on the East-West corridor, rail connectivity, and international customs facilities.

SO5. Expanding the exports of technical-engineering and medical services to Iraq by leveraging the advantage of shared borders and target market demand.

Using opportunities to address weaknesses → (The province's dominant strategy)

WO1. Establishing integrated border and trade management through coordination between Iranian and Iraqi ministries.

WO2. Completing agricultural and industrial

production chains by creating bilateral border special zones.

WO3. Upgrading customs, logistics, and transportation infrastructure by leveraging national projects (railways, arterial roads)

WO4. Empowering exporters regarding standards, packaging, and Iraqi market regulations

Leveraging strengths to mitigate threats

ST1. Diversifying exports (agriculture, tourism, and services) to reduce reliance on oil and exposure to price volatility

ST2. Developing downstream petrochemical industries to counter downturns in the raw materials market

ST3. Strengthening sustainable tourism to mitigate the impacts of migration and economic stagnation

ST4. Optimizing the use of water and soil resources to combat dust storms and desertification

Mitigating weaknesses and avoiding threats

WT1. Reforming border governance structures to prevent conflicts between security and economic interests

WT2. Revitalizing and modernizing aging industries to preserve jobs and curb migration

WT3. Improving transportation infrastructure to manage pilgrim traffic and transit flows

WT4. Strengthening border-focused economic diplomacy to mitigate the impact of sanctions and instability in Iraq

Based on the IFE and EFE matrices, opportunity-weakness (WO) strategies currently have priority, focusing on addressing internal weaknesses by capitalizing on existing opportunities. However, this priority does not imply the abandonment of other SWOT strategic orientations. All four categories of strategies (SO, WO, ST, and WT) can be employed in the region's economic management and development processes, depending on prevailing conditions and shifts in internal and external factors. Accordingly, corresponding measures are presented below for each of the four strategic orientations; given the region's current position, WO strategies have been identified as the starting point and priority for intervention.

The QSPM results indicate the relative priority of strategies under current conditions and should not be interpreted as mandating the selection of a single strategy to the exclusion of other complementary ones. Because many economic development strategies for border regions are interdependent and complementary, implementing one strategy can simultaneously facilitate the realization or enhance

the effectiveness of others. Therefore, the differences in QSPM scores serve solely to establish a relative order of priorities for the context under study; minor score variations should not be viewed as definitive differences regarding the importance or practical effectiveness of the strategies. Furthermore, this prioritization addresses the general scope of economic development in border regions and does not imply the formulation of independent strategies for specific agencies or management levels. During the QSPM matrix development phase, selected internal and external factors were incorporated into the prioritization process based on their direct relevance and potential impact on weakness-opportunity (WO) strategies. Among internal factors, weaknesses such as the lack of unified commercial management, the absence of integrated management at the Mehran border, insufficient loading and unloading space, a shortage of customs equipment, unfamiliarity with Iraqi market regulations, non-compliance with standards, poor export packaging, the absence of core

industries, the lack of production chains, and limited private sector participation were evaluated due to their direct link to the key pillars of the WO strategies. Similarly, regarding external factors, opportunities such as establishing a special economic zone, creating bilateral border zones, fostering coordination between Iranian and Iraqi ministries, developing a nationwide rail link and an East-West corridor, expanding arterial roads, exporting medical services, promoting pilgrimage tourism to the Atabat, developing agricultural water supply networks, and showcasing entrepreneurial models and rural women were incorporated into the QSPM matrix, given their potential to support WO strategies. Accordingly, the selection of factors for the QSPM was conducted to directly reflect the link between internal and external factors and the chosen strategies. This approach aligns with the QSPM matrix's logic, which emphasizes evaluating the relative attractiveness of strategies based on key factors influencing strategy selection (David, 1986; David et al., 2009).

Table 6. Quantitative strategic planning matrix (QSPM) for the weaknesses (W) section

Factor	Weight	WO1	TAS	WO2	TAS	WO3	TAS	WO4	TAS
W1 Lack of business unit management	0.7	4	0.28	2	0.14	1	0.07	1	0.07
W2 Lack of integrated management of Mehran border	0.7	4	0.28	3	0.21	1	0.07	1	0.07
W9 Lack of unloading and loading space	0.5	3	0.15	2	0.1	1	0.05	1	0.05
W11 Lack of customs equipment	0.5	3	0.15	2	0.1	2	0.1	1	0.05
W12 Ignorance of Iraqi market rules	0.6	2	0.12	4	0.24	2	0.12	1	0.06
W13 Non-compliance with standards	0.6	1	0.06	2	0.12	4	0.24	1	0.12
W14 Weak export packaging	0.5	1	0.05	1	0.05	4	0.2	2	0.1
W17 Lack of parent industries	0.6	2	0.12	1	0.06	3	0.18	2	0.06
W18 Lack of production chain	0.6	1	0.06	2	0.12	3	0.18	1	0.18
W21 Weak private sector	0.7	1	0.07	1	0.07	3	0.21	3	0.28

Table 7. Quantitative strategic planning matrix (QSPM) for the opportunities (O) section

Factor	Weight	WO1	TAS	WO2	TAS	WO3	TAS	WO4	TAS
O1 Setting up a special economic zone	0.6	3	0.18	2	0.12	2	0.12	2	0.12
O2 Creating special bilateral border zones	0.6	4	0.24	2	0.12	1	0.06	1	0.06
O4 Coordination between the ministries of Iran and Iraq	0.5	3	0.15	3	0.15	2	0.1	2	0.1
O5 National rail connection	0.5	2	0.1	2	0.1	2	0.1	2	0.1

Factor	Weight	WO1	TAS	WO2	TAS	WO3	TAS	WO4	TAS
O6 East-West corridor	0.6	2	0.12	2	0.12	3	0.18	4	0.24
O7 Development of arterial roads	0.5	2	0.1	2	0.1	3	0.15	4	0.2
O8 Export of medical services	0.5	2	0.1	2	0.1	3	0.15	4	0.2
O9 Tourism along the pilgrimage route	0.5	3	0.15	4	0.2	1	0.05	1	0.05
O12 Agricultural water supply networks	0.5	2	0.1	4	0.2	1	0.05	1	0.05
O13 Modeling entrepreneurs and rural women	0.7	3	0.21	3	0.21	2	0.14	2	0.14
Total			45/1		42/1		1/10	WO4	26/1

Table 8. Final QSPM sum – conservative strategies

Strategy	TAS Weaknesses	TAS Opportunities	Grand Total	Rank
WO1. Establishing integrated border and trade management through coordination between Iranian and Iraqi ministries	1.34	1.45	2.79	1
WO2. Completing agricultural and industrial production chains by creating bilateral special border zones	1.42	1.1	2.52	2
WO3. Upgrading customs, logistics, and transportation infrastructure by leveraging national projects (railways, arterial roads)	1.21	1.42	2.63	3
WO4. Empowering exporters regarding standards, packaging, and Iraqi market regulations	1.04	1.26	2.3	4

WO1. Establishing integrated border and trade management through coordination between Iranian and Iraqi ministries

Strategy WO1 is designed to address management deficiencies at the Mehran border and leverage opportunities for institutional coordination between Iranian and Iraqi ministries. Currently, multiple decision-making bodies, the absence of unified command, overlapping security and trade functions, and a lack of harmonized procedures have resulted in reduced border efficiency, increased transaction costs, and instability in export and import processes. By establishing an integrated border governance structure, this strategy seeks to utilize economic diplomacy and bilateral cooperation to streamline border processes. Coordination among the ministries of Foreign Affairs; Industry, Mining and Trade; Economic Affairs and Finance; Roads and Urban Development; and Agriculture Jihad, along with their Iraqi counterparts, will pave the way for regulatory alignment, the reduction of operational conflicts, and the formulation of joint border procedures. Implementing integrated management can mitigate existing deficiencies and enhance the sustainability of border trade by forming a joint secretariat, defining

unified operational protocols, and deploying smart decision-support systems.

Overall, WO1 is an institutional-structural strategy that targets chronic border management weaknesses by capitalizing on intergovernmental coordination opportunities, thereby fostering greater efficiency, stability, and planning capability in the Ilam-Mehran-Dehloran border trade corridor.

WO2. Completing agricultural and industrial production chains through the establishment of bilateral special border zones

Strategy WO2 is designed to address structural weaknesses in Ilam Province's value chains, specifically the sale of raw commodities, the absence of core industries, and the disconnect between production and markets. Currently, a significant portion of the province's agricultural and industrial output enters the market without adequate processing or value addition; this diminishes competitiveness in Iraq and heightens vulnerability to price fluctuations. Establishing bilateral special border zones through Iran-Iraq cooperation creates an opportunity to integrate production, processing, packaging, and export activities within a shared institutional framework. These zones can serve as a vital link between domestic producers and the

Iraqi market, addressing weaknesses in the production chain by attracting investment, facilitating technology transfer, establishing downstream processing industries, and streamlining trade. Processing facilities, standardized warehousing, and export support services within these zones reduce logistics costs and boost production efficiency. Furthermore, tax, customs, and regulatory incentives can encourage private sector and foreign investor participation, mitigating issues stemming from a weak private sector and aging industrial infrastructure. Ultimately, by aligning domestic production capacity with the institutional and geographical advantages of the border region, this strategy paves the way for productive employment, increased value addition, sustainable development, and enhanced economic resilience to external shocks.

WO3. Upgrading customs, logistics, and transportation infrastructure by leveraging national projects (railways, arterial roads)

Strategy WO3 is designed to address infrastructure deficiencies at the Mehran border, including a lack of customs equipment, insufficient loading and unloading space, road deterioration, and an inefficient transportation network. These weaknesses have increased clearance times and transport costs, while reducing export competitiveness for the province. By linking Ilam to national projects such as the nationwide rail network, the East-West corridor, and arterial road expansions, this strategy seeks to structurally upgrade border infrastructure. Leveraging these projects will elevate the Mehran border from a mere crossing point to a regional logistics hub and strengthen the province's role within the national transportation network. Concurrently, modernizing customs equipment, segregating routes for transit, exports, and pilgrims, and developing smart customs systems will boost productivity, reduce congestion, and improve border traffic management. By creating synergy between national investments and local needs, these measures enable the province to overcome infrastructure deficits. Ultimately, WO3 establishes the physical foundation necessary for implementing other development-oriented strategies, paving the way for increased cross-border trade efficiency, cost reductions, enhanced competitiveness, and a stronger role for Ilam within national and cross-border logistics networks.

WO4. Empowering exporters regarding Iraqi market standards, packaging, and regulations

Strategy WO4 directly addresses the knowledge and skill gaps of exporters in Ilam Province, shortcomings that contribute significantly to failures in the Iraqi market, stemming not from a lack of production, but from unfamiliarity with standards, inadequate packaging, a failure to align with Iraqi consumer preferences, and a lack of awareness regarding Iraqi trade and customs regulations. Leveraging the opportunity presented by cultural and institutional proximity to Iraq, this strategy focuses on developing export-oriented human capital. Implementing specialized training courses, establishing export consultancy centers, setting up standard-testing laboratories, and supporting packaging innovation can transform existing weaknesses into competitive advantages. Collaboration with Iraqi chambers of commerce and trade entities also facilitates the transfer of expertise, mitigates export risks, and enhances product alignment with target market needs. Empowering exporters not only reduces reliance on intermediaries but also increases the share of value-added captured by local producers, playing a vital role in the sustainability of cross-border trade. Ultimately, by enhancing product quality and standards, this strategy strengthens Iraqi market confidence in goods from Ilam and ensures the province's sustainable, long-term presence in target markets.

Within the proposed framework, the identified strategies do not operate in isolation; rather, they are best understood as a chain of interconnected interventions spanning various spatial levels. The economic development of border regions emerges from multi-level interactions between these spatial scales and the mechanisms that link them. In this chain, increased connectivity and reduced transaction costs, followed by reforms and strengthening of border governance and management, facilitate trade and cross-border flows. This facilitation unlocks the region's production, export, and service capacities; subsequently, deepening value chains, boosting private sector participation, and attracting investment can consolidate the economic benefits derived from the border location and enhance regional economic resilience. These mechanisms ultimately lead to economic development outcomes such as sustainable

employment, increased investment, value-added growth, improved economic resilience, and enhanced local welfare. Furthermore, development interventions can drive policy reform, strengthen linkage mechanisms, and recalibrate interventions across various spatial scales. Thus, the proposed framework rests on the premise that border potentials translate into economic development only when internal constraints, particularly managerial and institutional ones, are addressed alongside the exploitation of environmental opportunities. Within this framework, prioritizing WO strategies under current conditions does not preclude other strategic orientations; rather,

it identifies the most suitable starting point for intervention in the region's present situation. Mitigating internal weaknesses paves the way for more effective implementation of SO strategies, while ST and WT strategies continue to play a complementary role in managing threats, reducing vulnerability, and maintaining regional resilience. Consequently, the proposed framework is not a rigid, single-strategy prescription but a set of complementary interventions whose priorities and weightings can be adjusted in accordance with the region's internal and environmental conditions.

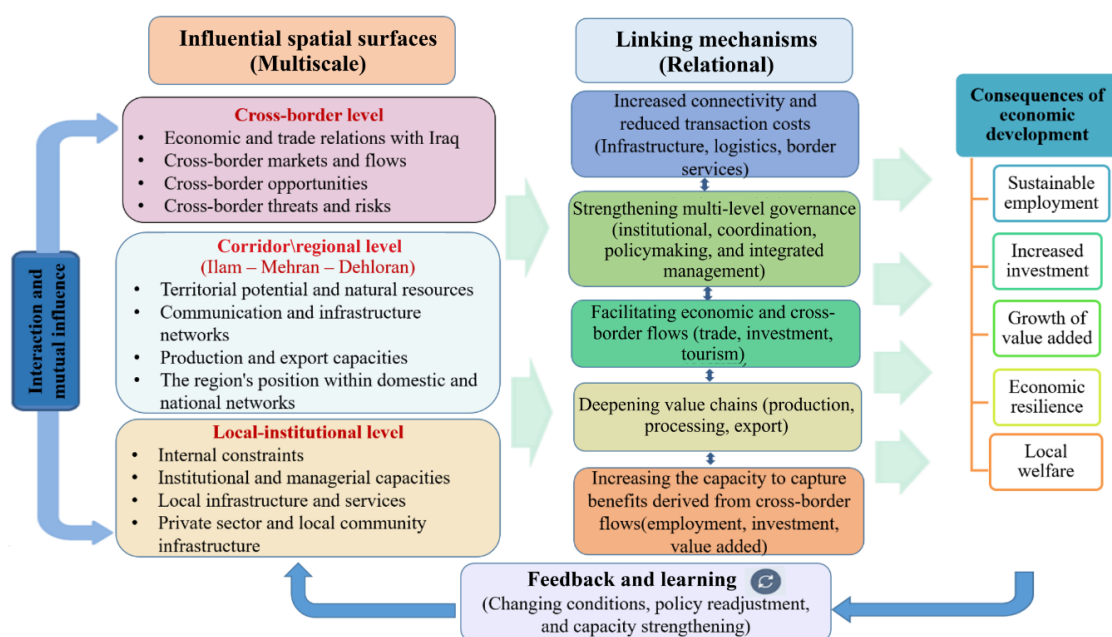


Figure 4. Proposed framework

6. Conclusion

Focusing on the economic development of the border regions in Ilam Province, this study sought to move beyond a purely geographical or sectoral perspective on the border and propose a framework to explain the mechanisms driving regional economic development. The findings revealed that the mere presence of a border, the Iraqi market, and potentials in oil and gas, agriculture, tourism, and connectivity does not guarantee economic development; rather, transforming these potentials into employment, investment, value added, and local welfare depends on the quality of integration into domestic and cross-border networks, the capacity to capture benefits from cross-border flows, the depth of value chains, and institutional and governance capacities.

Consequently, for the Ilam-Mehran-Dehloran axis, the core issue is the gap between territorial potentials and the institutional and economic capacity to sustainably harness them. These findings align with the study's theoretical framework concerning the simultaneous roles of the border, networks, and institutional capacity in economic development. The study's most significant contribution is a multi-scalar, relational analytical framework for the economic development of the Ilam border region. In this framework, the border region is conceptualized neither merely as a strip adjacent to the border line nor as synonymous with the entire province, but rather as a functional region defined by the interrelationships among Ilam, Mehran, Dehloran, the Mehran border crossing, and the economic and connectivity networks spanning

both sides of the border. The proposed framework is grounded in the interplay between the public structures of border regions, local assets and constraints, the region's position within domestic and cross-border networks, and institutional capacity; it links mechanisms such as reducing transaction costs, deepening value chains, enhancing absorptive capacity, diversification, and strengthening governance to developmental outcomes. Within this framework, SWOT and QSPM results served as tools to organize, evaluate, and prioritize strategic directions, rather than as a definitive implementation plan for responsible agencies. In the context under study, WO strategies emerged as having relatively higher priority for initiating interventions; however, this priority is temporary and context-dependent, with SO, ST, and WT strategies continuing to play a complementary role.

6.1. Research limitations

The primary contribution of this research lies in presenting a multi-scale, relational analytical framework for examining the economic development of border regions. Formulated with regard to the specific characteristics of the Ilam-Mehran-Dehloran corridor, the study does not claim to offer a universal, static prescription applicable to all border regions. Rather, it provides an analytical basis that can be adapted and tailored to other border areas, provided that it accounts for spatial, institutional, economic, and geopolitical differences in each region, across various levels ranging from the immediate border line to provincial and trans-border scales. Despite efforts to integrate theoretical foundations, spatial planning documents, qualitative data, expert insights, and quantitative assessments, the study faces certain limitations. First, a significant portion of the identified factors relies on the experts' perceptions and experiences. While expert opinion constitutes one layer of the research evidence, it cannot, on its own, fully represent the experiences of all economic actors, residents, border communities, and other stakeholders. Second, the study's scope is not the entire province of Ilam but rather the functional border region of Ilam-Mehran-Dehloran, defined according to a specific five-tier classification. Consequently, generalizing the findings to other counties within the province or to other border regions across the country requires careful consideration of variations in border type, economic structure, neighboring countries, connectivity networks, social

conditions, and institutional capacity at each spatial level. Third, the SWOT, IFE, EFE, and QSPM matrices are context- and time-specific; changes in economic, political, security, or trade conditions, as well as shifts in Iran-Iraq relations, could influence the assessment of factors and strategic priorities. Consequently, the study's quantitative results should not be viewed as fixed or permanent priorities for the region. Furthermore, these methods alone cannot establish causal relationships between factors and development outcomes; their results require corroboration through empirical evidence and studies. This limitation aligns with the study's own theoretical rationale, which regards SWOT as a tool for organizing evidence rather than a theory of causality.

Despite these limitations, the research findings must be interpreted within the study's multi-scalar and relational framework. The identified factors reflect expert perceptions of the Ilam-Mehran-Dehloran corridor rather than direct, objective measurements of all the region's economic, social, and institutional dimensions. Moreover, the proposed framework was developed within this corridor's specific spatial and institutional context. Therefore, directly generalizing it to other border regions, without recalibration to account for structural, institutional, economic, and geopolitical differences across various spatial scales, is not advisable.

6.2. Future research directions

Future research could test the proposed framework using empirical and longitudinal data to assess the relationships among connectivity, transaction costs, trade flows, absorptive capacity, value chains, investment, employment, and resilience. Incorporating the perspectives of private sector actors and conducting comparative studies between Iran's border regions and those of similar countries could further clarify the general and specific mechanisms of this framework. Additionally, examining the dynamics of the region's strategic position over time and testing the framework under varying economic, political, and geopolitical conditions could facilitate its evolution from an analytical framework into an empirically testable model.

6.3. Policy implications

The findings highlight the need for institutional recognition of border regions; policymaking must shift from a focus on the mere transit of goods to stabilizing

the value added of cross-border flows. Strengthening multi-level governance, connectivity infrastructure, logistics, processing industries, enterprise empowerment, and investment facilitation constitutes the pathway to transforming geographical border advantages into sustainable economic advantages. The proposed framework is not a substitute for formal planning; translating it into an actionable plan requires a designated lead entity, resources, a timeline, broad stakeholder participation, and monitoring indicators.

Authors' Contributions

First author 35%, second author 35%, third author 20%, fourth author 10%

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Conflict of Interest

The authors declare no conflicts of interest regarding this research.

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