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Maritime Infrastructure Development and Its Impact on SME Growth in Coastal Regions

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ABSTRACT

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Maritime infrastructure is increasingly viewed not simply as transport capital but as a platform connecting coastal economies to domestic and international production networks. Yet the extent to which port and maritime infrastructure development translates into growth of small and medium-sized enterprises (SMEs) remains insufficiently understood. This paper examines the relationship between maritime infrastructure development and SME growth in coastal regions through a structured integrative review of peer-reviewed literature published through 2026. Particular attention is given to recent evidence on port connectivity, port-hinterland integration, port-industry-city development, regional economic spillovers, resilience, logistics performance and firm-level market access. The synthesis identifies five principal transmission mechanisms: reductions in logistics and transaction costs; expansion of domestic and international market access; formation of industrial and service clusters; improvements in productivity, employment and investment; and integration of SMEs into maritime and global value chains. The findings indicate that port development can generate substantial regional economic opportunities, but infrastructure investment alone is insufficient to ensure broad-based SME growth. Benefits depend on the quality of hinterland transport, digital and customs systems, human capital, access to finance, local supplier capabilities and institutional coordination. Moreover, improved maritime connectivity may generate uneven spatial outcomes, stronger competitive pressures, land-use conflicts and exposure to disruption when coastal economies become dependent on a narrow set of ports or trade routes. The paper consequently proposes a shift from a port-expansion paradigm toward an SME-inclusive coastal development framework in which maritime infrastructure is integrated with local enterprise policy, logistics digitalisation, supplier-development programmes, resilient hinterland networks and environmental safeguards. The analysis contributes to maritime policy research by connecting the traditionally macro-level literature on ports and regional development with the firm-level literature on SME competitiveness and market access.

Introduction

Maritime infrastructure occupies a strategic position in the geography of economic development. Seaports connect national and regional economies with international shipping networks, while terminals, navigation channels, storage facilities, logistics parks, road and rail corridors, inland terminals and digital port systems collectively determine how efficiently cargo moves between producers and global markets. The economic significance of ports therefore extends well beyond the physical transfer of goods between ships and shore. Modern ports function as nodes within complex transport, production, logistics, information and service networks.

The transition from the conventional port model to an integrated logistics model has changed the relationship between ports and their surrounding economies. Notteboom and Rodrigue (2005) describe this transition in terms of port regionalisation, whereby the competitive performance of a seaport becomes increasingly dependent on connections with inland freight distribution systems and economic hinterlands. Consequently, evaluating port infrastructure only through terminal throughput or vessel capacity understates its potential developmental role. Roads, railways, dry ports, logistics centres, digital systems, customs procedures and industrial zones can be as important to regional economic outcomes as the quay itself. Port regionalisation therefore implies that the effective economic boundary of a maritime gateway extends substantially beyond its waterfront.

Empirical evidence broadly supports the proposition that ports and maritime connectivity can stimulate regional economic activity. Bottasso et al. (2014), using European regional data, find that port activity generates economic effects both within port regions and through spatial spillovers to neighbouring areas. Song and van Geenhuizen (2014) similarly demonstrate that port infrastructure investment can positively affect regional economic growth, although the magnitude varies considerably according to regional characteristics, connectivity and economic structure. Park and Seo (2016) show that port activity in South Korea contributes to regional growth particularly when sufficient cargo throughput is present, demonstrating that the mere existence of infrastructure does not guarantee economic benefits. More recent quasi-experimental evidence indicates that improvements in maritime connectivity can produce durable increases in economic activity around ports and that expansion of port capacity is one mechanism through which these effects emerge (Li et al., 2023).

This question is especially important for coastal regions in developing and emerging economies. Such regions frequently exhibit a paradox. They may possess strategic geographical locations and major maritime gateways while simultaneously experiencing unemployment, limited industrial diversification, weak local supply chains and underdeveloped small-business sectors. Large infrastructure projects can increase national trade without automatically producing equivalent gains for local communities. A container terminal, for example, may efficiently handle international cargo while sourcing specialised services, capital equipment and professional expertise from large domestic or multinational corporations outside the immediate region. The critical policy question is therefore not simply whether ports generate growth, but under what conditions maritime infrastructure generates locally embedded growth accessible to SMEs.

SMEs deserve particular attention because they form important components of employment creation, entrepreneurship, services, manufacturing, fisheries, tourism, repair and maintenance, transport, food processing, marine services and local supply chains in coastal economies. Yet they also experience disadvantages relative to larger enterprises. Limited capital, smaller shipment volumes, inadequate technological capabilities, information asymmetries and high fixed costs of entering export markets can make transport inefficiency disproportionately damaging to smaller firms. Evidence from transition economies demonstrates that infrastructure, digitalisation and innovation capabilities are closely connected with the ability of SMEs to develop export capacity, although infrastructure does not generate export success automatically without complementary firm capabilities (Edeh et al., 2025). Research on coastal SME clusters in developing countries likewise highlights the importance of location-specific resources, institutional conditions and clustering in enterprise survival and development (Banwo et al., 2017).

The literature, however, remains fragmented. Port economics largely examines outcomes such as GDP, throughput, employment, trade and regional productivity, whereas SME research typically focuses on business climate, finance, innovation, entrepreneurship or digitalisation. Relatively few studies directly estimate the causal effect of specific maritime infrastructure investments on SME entry, survival, productivity or export performance. This separation creates an important analytical gap.

Recent studies published in 2026 sharpen this issue. Research on African port hinterlands demonstrates that investments improving accessibility may simultaneously affect the redundancy and resilience of transport networks (Verschuur & Tavasszy, 2026). Work on coastal port-industry-city integration shows that infrastructure, industrial configuration, rail accessibility, land use and quality of life must be coordinated rather than addressed separately (Zhang et al., 2026). Li et al. (2026) demonstrate that port and hinterland efficiencies are interdependent and that coordinated port-cluster development can create wider regional economic effects. Daudet et al. (2026) show how geopolitical disruption can rapidly alter the relative position of Mediterranean ports, while Juhász et al. (2026) emphasise that technological change and network restructuring produce large but geographically uneven gains among port cities. Together these studies shift attention from infrastructure volume toward connectivity, resilience, spatial distribution and institutional coordination.

Against this background, this paper asks three questions:

RQ1: Through what mechanisms does maritime infrastructure development affect SME growth in coastal regions?

RQ2: What complementary conditions determine whether maritime infrastructure benefits local SMEs?

RQ3: What policy framework can maximise SME participation while limiting spatial, economic and resilience risks associated with maritime infrastructure expansion?

The paper contributes by integrating maritime infrastructure, regional-development and SME literatures into a common analytical framework. It argues that maritime infrastructure should be understood as an enabling platform rather than an autonomous engine of SME growth.

Literature Review

Maritime infrastructure, transport costs and trade

The most established mechanism connecting infrastructure and economic performance operates through transport costs. Limão and Venables (2001) demonstrate the importance of infrastructure quality in determining transport costs and international trade performance. Clark et al. (2004) extend this logic specifically to maritime transport, showing that port efficiency is an important determinant of shipping costs and bilateral trade. Their work established that institutional inefficiencies, regulation and poor infrastructure can impose economic costs comparable to geographical distance.

These results are particularly relevant to SMEs. Internationalisation involves fixed as well as variable costs. Documentation, inland transportation, customs compliance, terminal handling, storage, uncertainty and shipment consolidation can represent relatively larger burdens for firms shipping smaller volumes. Accordingly, infrastructure improvements that reduce transport time and uncertainty can alter the threshold at which smaller enterprises can profitably serve non-local markets.

Portugal-Perez and Wilson (2012) distinguish between “hard” infrastructure, including physical transport and communications systems, and “soft” infrastructure, including regulatory and business-environment reforms. Their evidence indicates that both dimensions matter for export performance and can be complementary. This distinction is highly relevant to port policy. Deepening a channel or constructing a terminal may not substantially reduce total logistics costs if trucks remain delayed outside the port, customs clearance remains unpredictable or cargo documentation is fragmented across institutions.

Munim and Schramm (2018), analysing countries with seaports, demonstrate that port infrastructure quality improves logistics performance and that logistics performance facilitates seaborne trade and wider economic growth. Importantly, the relationship is particularly consequential in developing economies. The implication is that maritime infrastructure should be evaluated as a chain: infrastructure affects logistics performance; logistics performance influences trade; and trade can subsequently generate broader economic activity.

Ports and regional economic development

Ports can influence regional economies through direct employment, investment, indirect demand, industrial location decisions, knowledge flows and agglomeration.

Bottasso et al. (2013) find a relationship between port throughput and employment across European regions, while Bottasso et al. (2014) provide evidence of regional GDP effects and spatial spillovers. The latter finding is important because the economic impact of a port does not necessarily remain within the municipality in which it is physically located. Firms can locate along transport corridors, in neighbouring logistics zones or in inland production centres while benefiting from maritime connectivity.

Song and van Geenhuizen (2014) show positive associations between port infrastructure investment and regional economic growth in China but also demonstrate substantial geographical heterogeneity. Connectivity, manufacturing structure and regional characteristics influence the strength of the relationship. Park and Seo (2016) similarly find that cargo ports contribute to regional growth only when sufficient activity is generated. These findings caution against equating infrastructure spending with development.

More recent evidence reinforces the importance of connectivity. Li et al. (2023) use the Panama Canal expansion as a quasi-natural experiment and find that improvements in maritime connectivity stimulated economic activity in affected port regions, with port capacity expansion constituting an important transmission mechanism. Unlike simple correlations between throughput and GDP, this approach provides stronger evidence that changes in network connectivity can generate economic consequences.

Port integration can also alter the distribution of economic activity. Ma et al. (2021), examining Chinese port cities, find that port integration can promote urban economic growth through more efficient allocation of port resources, although effects differ across regions and city sizes. Similarly, Yeon et al. (2024) show that ports can function as sources of knowledge and industrial spillovers, supporting diversification and regional economic resilience when port capabilities are related to existing regional industries.

These studies suggest that the important question for SMEs is not merely the quantity of infrastructure but whether port growth creates linkages with local enterprise systems.

Hinterland connectivity and market access

The developmental effectiveness of a seaport depends greatly on its hinterland. Notteboom and Rodrigue (2005) argue that contemporary port competition increasingly occurs within networks linking terminals to inland distribution centres and regional production systems. Under this model, road, rail and logistics corridors expand the effective market area of the port.

Firm-level transport research supports the broader mechanism. Gibbons et al. (2019) find that road infrastructure improvements in Britain increased employment and the number of establishments and generated productivity-related changes among existing firms. More recent evidence also shows that improvements in transportation infrastructure can lower barriers to export-market entry and increase the number of firms participating in export markets.

This mechanism is especially important for SMEs because small firms are sensitive to first- and last-mile costs. A coastal region may contain a modern terminal but remain poorly connected to inland suppliers and customers. In such cases, the economic geography of SME participation can remain narrow.

Verschuur and Tavasszy (2026) deepen the analysis by introducing resilience considerations into African port-hinterland investment. They show that improvements in accessibility may produce complex changes in network redundancy. A region can gain faster or cheaper access to a major gateway while becoming more dependent on a limited number of corridors. Thus, efficient connectivity and resilient connectivity are related but distinct policy objectives.

Agglomeration, clusters and SME development

Ports can create conditions for agglomeration by concentrating flows of cargo, information, labour, finance and specialised services. Businesses such as freight forwarders, transport operators, customs agents, repair companies, cold-chain providers,

food processors, packaging companies, marine equipment suppliers, software providers and professional services may locate near maritime gateways to reduce coordination costs.

For SMEs, clustering can partially offset disadvantages of scale. Banwo et al. (2017) emphasise that location-specific factors and clustering influence SME survival and growth in developing-country coastal environments. Shared infrastructure, specialised labour and proximity to customers can facilitate entrepreneurship when local institutions support the cluster.

Wang and Wu (2023), examining Shenzhen, show a long-run relationship between port logistics and hinterland economic development. Their findings support a conception of ports and regional economies as mutually reinforcing systems rather than independent sectors.

Recent research on offshore wind provides an additional example of this mechanism. Kosek et al. (2025) argue that ports can become logistics and service hubs for offshore wind supply chains, creating opportunities for regional industrial development and employment when local suppliers can participate. This is directly relevant to SMEs in engineering, maintenance, transport, fabrication, environmental services, accommodation and marine operations.

SME competitiveness, infrastructure and capabilities

Infrastructure does not remove all constraints facing SMEs. Edeh et al. (2025), using evidence from 8,048 SMEs across 16 transition economies, find a complex relationship between infrastructure and export intensity. Their results underline the importance of digitalisation and innovation capabilities and suggest that infrastructure improvements need to be complemented by policies strengthening enterprise capabilities.

This finding challenges simplistic infrastructure-led development strategies. A port can make international markets physically accessible without making SMEs organisationally capable of entering those markets. Exporting firms require quality standards, reliable production, finance, digital systems, information, certification, logistics expertise and capacity to absorb commercial risk.

Therefore, the expected relationship can be represented as:

Maritime infrastructure → logistics and connectivity improvement → market accessibility → enterprise opportunity → SME growth

but the final link is conditional on:

finance + skills + technology + institutions + supplier capability + resilience + environmental sustainability.

Methodology

Research design

This study employs a structured integrative literature-review methodology. This approach is appropriate because the research question crosses several bodies of scholarship: maritime economics, port policy, transport geography, regional economics, international trade and SME development.

The objective is not to estimate a new causal coefficient from primary data. Instead, the paper synthesises verified empirical and conceptual evidence to identify the pathways through which maritime infrastructure can influence SMEs and to determine the conditions under which the expected effects are strengthened or weakened.

Literature identification and selection

The analytical literature was selected through targeted searches of academic publisher records, journal databases and DOI-indexed scholarly material available through August 2026. Combinations of terms such as *port infrastructure*, *maritime*

connectivity, port regional development, port hinterland, coastal SME, transport infrastructure firm productivity, SME export infrastructure, port logistics, regional economic resilience and port-industry-city integration were used.

Studies were prioritised when they met at least one of the following criteria:

1. quantitatively evaluated the economic effects of port or maritime infrastructure;
2. examined port connectivity, logistics performance or hinterland accessibility;
3. analysed port-related regional employment, diversification or spillovers;
4. investigated transport infrastructure effects at firm level;
5. directly examined infrastructure and SME competitiveness; or
6. provided recent policy-relevant evidence on coastal-port development.

Particular priority was assigned to peer-reviewed work in recognised maritime, transport, regional-development and business journals. The review deliberately incorporates recent 2026 research from *Transportation Research Part A: Policy and Practice*, *Maritime Policy & Management*, *Maritime Economics & Logistics* and *Regional Science and Urban Economics*.

Analytical framework

Evidence was organised using a mechanism-based framework consisting of five dimensions:

Infrastructure inputs: port terminals, channels, storage, logistics zones, roads, railways, inland ports and digital infrastructure.

Intermediate outcomes: reduced costs, shorter transit times, improved reliability, better connectivity and greater freight-handling capacity.

Market and spatial mechanisms: expanded market access, agglomeration, industrial clustering, investment attraction and value-chain integration.

SME outcomes: firm entry, survival, employment, productivity, exports, investment and innovation.

Moderating conditions: governance, finance, skills, digitalisation, hinterland connectivity, resilience and environmental management.

The resulting findings should therefore be interpreted as a structured synthesis of the strongest recurring mechanisms in the literature rather than as a new meta-analytic effect size.

FINDINGS

Maritime infrastructure lowers logistics barriers facing SMEs

The first and most consistent finding is that the economic value of maritime infrastructure emerges principally through improved logistics rather than through physical construction alone.

Port efficiency reduces handling and transport costs, while better inland infrastructure reduces the cost of reaching maritime gateways. This is particularly important for SMEs because they generally possess less bargaining power with logistics providers, maintain smaller inventories and ship smaller consignments than large corporations.

Clark et al. (2004) show that differences in port efficiency have important effects on maritime transport costs and trade. Limão and Venables (2001) similarly establish infrastructure as an important determinant of transport costs. Munim and Schramm (2018) show that port infrastructure quality feeds into logistics performance, seaborne trade and growth. Together these studies establish the cost-reduction pathway underlying potential SME benefits.

However, the relevant cost is door-to-door logistics cost, not merely port charges. SMEs receive limited benefit from efficient cranes if containers spend excessive time in inland congestion, customs inspection or warehouse queues. Consequently, policy evaluation should measure total logistics performance.

Better connectivity increases market access and export opportunities

The second finding is that maritime and transport connectivity can expand the economically viable market area of firms.

Li et al. (2023) find that improved maritime connectivity generated durable economic effects around ports following the Panama Canal expansion. At firm level, transportation improvements can lower barriers to export participation and facilitate the entry of new firms into external markets.

For SMEs, this can produce several outcomes. Firms producing processed food, seafood, garments, handicrafts, engineering components, marine supplies or business services may gain access to customers that were previously too expensive or unreliable to serve. Import-dependent SMEs may also obtain intermediate inputs and machinery at lower effective cost.

Nevertheless, expanded access works in both directions. Improved infrastructure also enables outside firms to compete more efficiently in coastal markets. SMEs with weak technology or productivity can therefore experience stronger competitive pressure. Infrastructure creates market access, not guaranteed market share.

Port development can stimulate clusters and local supply chains

The third finding concerns agglomeration.

Modern ports require networks of supporting firms. Transport, warehousing, cold storage, customs brokerage, repair, maintenance, ICT, security, hospitality, food supply, marine engineering and environmental services create opportunities for specialised local businesses.

Bottasso et al. (2014) identify spillovers extending beyond immediate port regions, and Yeon et al. (2024) show that ports can contribute to industrial diversification by functioning as sources of knowledge connected to regional production structures. Li et al. (2026) provide recent evidence that efficiency relationships within port clusters extend between ports and their hinterlands, while regional coordination can strengthen economic linkages.

This suggests an important distinction between throughput-oriented ports and development-oriented port ecosystems. The former maximise cargo movements; the latter deliberately connect cargo activity to local production and service networks.

For SME policy, this means procurement and supplier development are central. If terminal operators and major shipping-related corporations obtain most goods and services from external suppliers, local multiplier effects remain limited. Local vendor databases, certification programmes, SME procurement targets, supplier-development initiatives and cluster associations can increase the share of economic value retained within coastal regions.

Employment and productivity effects are significant but uneven

Infrastructure development can increase employment both during construction and through subsequent economic activity.

Bottasso et al. (2013) find positive employment effects associated with port throughput in European regions, while Gibbons et al. (2019) show that transport improvements can increase establishments and employment and alter productivity among existing firms.

Yet such effects should not be assumed to be uniform. Containerisation and port automation have reduced direct labour requirements per unit of cargo in many modern terminals. Economic benefits may increasingly occur in logistics, manufacturing and services rather than dock employment itself.

This makes workforce policy crucial. Coastal residents and SME owners require competencies in logistics, engineering, ICT, customs, quality assurance, environmental management and digital trade if they are to capture new opportunities. Infrastructure without local skills may increase the value of the region as a logistics location while producing relatively weak gains for incumbent communities.

Hinterland infrastructure determines the geographical distribution of benefits

A fifth finding is that hinterland accessibility determines whether port-related growth remains concentrated in a narrow waterfront zone or spreads into wider regional economies.

Notteboom and Rodrigue (2005) established the conceptual basis for port regionalisation. Song and van Geenhuizen (2014) subsequently showed that the economic return from port infrastructure differs according to regional transport conditions. Verschuur and Tavasszy (2026) demonstrate that African hinterland accessibility and redundancy can vary independently, creating trade-offs between efficiency and resilience.

This is especially relevant to smaller coastal cities. Investment concentrated entirely inside port boundaries can produce an enclave economy. By contrast, connecting ports to secondary towns, industrial areas, fishing communities and agricultural production centres can broaden the geographical distribution of benefits.

Digital infrastructure has become part of maritime infrastructure

The definition of maritime infrastructure increasingly includes digital systems. Port community systems, customs single windows, cargo tracking, electronic documentation and logistics platforms reduce information asymmetries and coordination costs.

For SMEs, digitalisation can be particularly important because administrative fixed costs disproportionately affect smaller consignments. However, Edeh et al. (2025) show that infrastructure and digitalisation interact with firm-level innovation capabilities in complex ways. Digital systems therefore need to be accessible, interoperable and affordable rather than designed exclusively around large logistics operators.

Resilience is becoming a core dimension of SME-oriented port development

The 2026 literature makes particularly clear that connectivity alone is no longer an adequate policy objective.

Daudet et al. (2026) demonstrate how disruption to Red Sea–Suez routes altered container-network configurations and the relative positioning of Mediterranean ports. Verschuur and Tavasszy (2026) show that investments improving port accessibility can sometimes reduce redundancy. Juhász et al. (2026) further emphasise that maritime technological change and network concentration can generate geographically localised benefits as well as vulnerabilities.

SMEs are particularly exposed to disruption because they often possess less working capital, fewer alternative suppliers and lower inventory buffers than larger firms. An SME-inclusive infrastructure strategy therefore requires alternative routes, multimodal options, emergency logistics protocols and digital visibility systems.

Discussion

From port growth to SME growth

The evidence supports a positive but conditional relationship between maritime infrastructure development and SME growth.

A useful distinction can be drawn between three stages.

The first is infrastructure creation, encompassing terminals, channels, roads, railways, logistics parks and digital systems.

The second is economic transmission, including lower transport costs, improved reliability, expanded market access and industrial agglomeration.

The third is enterprise capture, where SMEs translate these changes into higher sales, productivity, employment, investment or exports.

Much maritime policy implicitly assumes that the third stage follows automatically from the first two. The literature reviewed here suggests otherwise.

SMEs require absorptive capacity. A local seafood processor, for example, may benefit from a refrigerated terminal only if it can satisfy sanitary standards, finance working capital, secure reliable inputs and organise export documentation. An engineering SME may benefit from an offshore-wind service port only if it possesses relevant certifications and technical skills. Infrastructure changes the opportunity set; complementary capabilities determine who captures the opportunities.

A port-SME development multiplier

The findings suggest a conceptual port-SME development multiplier.

When maritime infrastructure reduces logistics costs, local firms become more competitive. Higher competitiveness can stimulate sales and investment. Rising firm activity increases demand for transport, warehousing, maintenance, professional and digital services. These supporting activities attract new businesses and workers. Increasing business density can subsequently deepen the local supplier network and further improve the attractiveness of the coastal region.

The multiplier is strongest where local economic linkages are dense.

Conversely, an enclave port generates a weak multiplier. Cargo may move efficiently through the terminal while value-added services, suppliers, finance and corporate decisions remain external to the region.

This interpretation is consistent with findings that port activity produces spatial spillovers (Bottasso et al., 2014), that integration can improve resource allocation (Ma et al., 2021), and that neighbouring ports can contribute to related industrial diversification (Yeon et al., 2024).

The importance of port-industry-city integration

Zhang et al. (2026) provide particularly relevant evidence by treating coastal-port development as an integrated land-use, transport, industrial and quality-of-life problem. Their study illustrates that infrastructure planning cannot be separated from urban form and industrial location. Rail infrastructure and coordinated spatial planning can enhance industrial agglomeration while reducing some conflicts between ports and urban development.

For SMEs, land policy matters because rapidly developing port districts can increase rents and property values. Smaller enterprises may initially benefit from agglomeration but subsequently be displaced by escalating land costs. SME zones, shared logistics facilities, incubators and well-connected secondary commercial areas can help retain local businesses within the port-city economy.

Distributional risks

Port investment creates winners and losers.

Better connectivity can raise land values, increase congestion, intensify competition and relocate economic activity. Larger firms may capture opportunities earlier because they possess greater financial and managerial resources. Workers with specialised skills may experience stronger income gains than lower-skilled residents.

Environmental costs can also fall disproportionately on communities located near terminals and freight corridors through pollution, noise, traffic and land-use pressure.

Therefore, aggregate increases in regional GDP are insufficient indicators of successful maritime development. SME growth, local procurement, enterprise survival, wage distribution, employment accessibility and environmental conditions should also be monitored.

Implications for developing coastal economies

The policy implications are especially important for developing economies seeking to use ports as catalysts for industrial transformation.

Evidence from Senegal suggests that improved port efficiency can generate wider welfare and competitiveness gains through cheaper inputs and more efficient trade (Sahoo et al., 2025). The broader literature nevertheless indicates that such outcomes require complementary institutions and transport systems.

Rather than evaluating port projects primarily through capacity and throughput forecasts, governments should incorporate explicit local-enterprise objectives into project appraisal.

A practical SME-inclusive maritime strategy should contain six components.

First, **hinterland connectivity** must connect ports with productive regions rather than merely metropolitan consumption markets.

Second, **port-community digitalisation** should simplify customs, documentation and cargo visibility for firms of all sizes.

Third, **local supplier-development programmes** should prepare SMEs for procurement opportunities associated with terminals, shipping, logistics, offshore energy and marine services.

Fourth, **trade finance and working-capital facilities** should help smaller exporters manage the financial cycle between production, shipment and payment.

Fifth, **skills programmes** should align vocational and technical education with emerging port and maritime industries.

Sixth, **resilience and environmental safeguards** should be built into infrastructure planning rather than treated as secondary corrections.

Policy framework

A maritime infrastructure policy oriented toward SME growth should consequently shift from:

“Build the port and growth will follow”

toward:

“Build connectivity, enterprise capability and regional linkages around the port.”

Port authorities can support this transition by acting as development coordinators rather than solely landlords or infrastructure operators. Local governments, chambers of commerce, universities, logistics firms, financial institutions, customs agencies and SME associations should participate in port-development planning.

Performance indicators should consequently extend beyond tonnes and TEUs. Relevant metrics include:

- number of local SMEs supplying the port ecosystem;
- SME survival and firm-entry rates;
- logistics costs for small consignments;
- proportion of port procurement sourced locally;
- SME export participation;
- jobs created within local supplier networks;
- time required for customs and documentation;
- SME access to digital port systems;
- share of local workers receiving maritime-related training;
- resilience of alternative transport corridors; and
- environmental conditions in surrounding communities.

Such indicators would provide a more realistic measure of whether port investment is generating inclusive coastal development.

Conclusion

This paper examined the relationship between maritime infrastructure development and SME growth in coastal regions by integrating evidence from port economics, transport research, regional development and SME studies.

The principal conclusion is that maritime infrastructure can be a powerful enabler of SME growth, but its effects are indirect, conditional and spatially uneven.

Port development can lower logistics costs, improve reliability, expand access to domestic and international markets, stimulate industrial clustering and attract investment. Empirical evidence consistently demonstrates significant relationships between port infrastructure, logistics performance, trade, regional economic activity and employment. Recent research published in 2026 further establishes the importance of port-hinterland coordination, resilient connectivity, coastal land-use integration and changing maritime networks.

However, these effects should not be interpreted as evidence that construction of a large port automatically produces a thriving local SME sector.

The transformation from maritime connectivity to SME growth depends on whether local enterprises can participate in the opportunities created. Access to finance, technology, information, skills, certification and digital logistics systems is therefore fundamental. Equally important are road and rail hinterland connections capable of spreading port benefits beyond immediate waterfront areas.

The analysis consequently supports an integrated port-hinterland-SME ecosystem approach to maritime policy. Under this model, infrastructure investment is accompanied by supplier development, SME finance, export support, vocational education, digital trade facilitation, industrial clustering and multimodal connectivity.

Resilience must also become a central criterion. The disruptions experienced across contemporary maritime networks demonstrate that highly efficient but concentrated transport systems can create vulnerabilities. SMEs, because of their limited

inventories and financial buffers, are particularly exposed to prolonged logistics disruptions. Infrastructure planning should therefore pursue redundancy and adaptability alongside efficiency.

Finally, sustainable coastal development requires attention to distribution. Port-related growth that increases national trade while displacing local firms, concentrating economic gains or increasing environmental burdens cannot be regarded as fully successful development.

The most effective maritime infrastructure policy is therefore not one that maximises cargo throughput in isolation. It is one that converts maritime connectivity into productive local capabilities, competitive SMEs, diversified employment and resilient coastal economies.

Limitations and Future Research

This study has several limitations.

First, it is an integrative literature-based study and does not estimate new firm-level causal effects. The conclusions reflect synthesis across countries, infrastructure types and research methodologies.

Second, direct empirical research specifically linking maritime infrastructure interventions to SME-level outcomes remains limited. Much of the strongest port literature measures GDP, employment, throughput or trade, while firm-level infrastructure studies frequently examine roads or multimodal accessibility rather than ports specifically. The synthesis therefore connects complementary bodies of evidence rather than claiming that all observed regional port effects are automatically SME effects.

Third, the definition of an SME varies across jurisdictions according to employment, turnover and asset thresholds. Cross-country comparisons should therefore be interpreted cautiously.

Fourth, coastal economies are heterogeneous. Large metropolitan container ports, fishing ports, tourism-oriented coastal economies, offshore-energy service ports and small-island gateways may exhibit substantially different SME development pathways.

Fifth, infrastructure investment is potentially endogenous. Rapidly growing regions may attract infrastructure investment rather than infrastructure independently causing growth. Recent quasi-experimental studies provide stronger identification, but additional firm-level causal research is needed.

Future studies should therefore combine geocoded SME datasets with port-expansion events, customs records, business registries, logistics-cost measures and transport-network data. Difference-in-differences, synthetic-control and spatial-econometric methods could be used to identify how port investments affect firm creation, survival, productivity and exports at different distances from maritime gateways.

Research should also examine distributional questions: whether micro and small enterprises gain as much as medium-sized firms; whether women- and youth-owned enterprises participate in maritime supply chains; whether digital ports reduce or increase entry barriers; and whether environmental costs reduce welfare gains in nearby communities.

Such work would move maritime policy research from demonstrating that ports matter for economies toward identifying which firms benefit, through which mechanisms, in which places, and under what institutional conditions.

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