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STRATEGIC BUSINESS AND MANAGEMENT PRACTICES FOR ENHANCING TOURISM UNDER CPEC: A CROSS-BORDER PERSPECTIVE

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Abstract

This study quantifies how strategic business and management practices can unlock tourism potential along the China–Pakistan Economic Corridor (CPEC). Using a 2015-2023 panel of 378 district-year observations and a cross-section of 1,822 tourism SMEs, we estimate a Spatial Durbin Model and double-hurdle revenue equation. Results show that a 1 % increase in road density raises district tourist arrivals by 0.46 % and spills over 0.21 % to neighbours ($p < 0.01$), while heritage density amplifies the total effect to 0.49 %. PPP intensity, visa facilitation and digital-platform adoption exert significant positive elasticities. Stakeholder surveys reveal that 54 % of SMEs cite regulatory uncertainty and 82 % of Chinese operators demand one-stop digital licensing, whereas 63 % of local communities insist on KPI-linked revenue sharing. Two pilots confirm policy impact: a tri-sector governance board in Gilgit-Baltistan lifted satisfaction by 18 % and cut poaching by 35 %, while a Gwadar Blue-Economy PPP achieved 72 % occupancy and created 400 local jobs. Simulations indicate that joint visa and PPP reforms could raise arrivals 12.8 % and yield a USD 2.3 billion net present value over five years. The study concludes that CPEC hardware must be complemented by governance software—digital platforms, heritage-linked PPPs and community revenue-sharing—to generate inclusive, sustainable tourism growth.

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Introduction

The China–Pakistan Economic Corridor (CPEC) has channelled more than US $65 billion of Chinese investment into Pakistan since 2015, upgrading 3,218 km of highways, constructing new international airports in Gwadar and Islamabad, and reducing travel time from Kashgar to Gwadar from 28 days to 36 hours (Z. Ahmed et al., 2025). Yet, despite this dramatic improvement in physical accessibility, tourism receipts have stagnated at only 0.8 % of national GDP, well below the 3.1 % average for South Asian economies (Nazneen et al., 2019). This paradox underlines the need to move beyond infrastructure and empirically test the quantitative impact of strategic business and management practices on tourism outcomes along CPEC routes.
Business-level strategies most notably destination clustering and dynamic pricing have been shown to raise visitor expenditure by 12–18 % in comparable corridors (Akamavi et al., 2023; Bari et al., 2019). However, no panel study has yet isolated their effect within a cross-border infrastructure setting. Likewise, public–private partnership (PPP) intensity, measured as the share of hotel rooms under concession agreements, has been linked to faster occupancy recovery after shocks (Ali et al., 2025), but its causal elasticity for tourist arrivals remains unquantified for CPEC districts. Management models also matter. A composite governance score that captures regulatory certainty, e-permit turnaround times, and heritage-site carrying-capacity enforcement explains 27 % of the cross-district variance in tourist satisfaction (Kanwal et al., 2020). Yet these governance indicators have not been merged with large-N arrival data to yield policy-ready elasticities.

Cross-border collaboration variables are equally critical. An index of visa-facilitation reforms—covering e-visa availability, group visa validity, and average processing days—was found to raise inbound Chinese arrivals by 9.4 % in Central Asian corridors (Husnain, 2021). Similarly, joint marketing spend by bilateral tourism promotion funds has a documented 0.19 elasticity with respect to visitor spend in ASEAN corridors (UNWTO, 2024). Whether these effects transfer to the CPEC context is an open empirical question.

We address this gap by constructing a 2015–2023 district-level panel for 42 CPEC districts and a cross-sectional firm-level sample of 1,842 tourism SMEs. Using a spatial Durbin model, we estimate the direct and spill-over effects of business strategies, management models, and cross-border collaboration on logged tourist arrivals and daily spend. A double-hurdle model then quantifies the revenue elasticity of digital-platform adoption among firms. The resulting elasticities allow us to simulate counterfactual policy scenarios and to rank interventions by their quantitative impact on tourism outcomes under CPEC.

Literature Review

The CPEC is a phenomenon that has generated numerous studies, particularly regarding its capacity to stimulate the growth of the Pakistani economy and enhance tourism. Nonetheless, despite these diverse studies on the economic

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consequences of CPEC infrastructure, there are relatively fewer studies that have explored the subtle processes involved in the effective exploitation of infrastructure investments based on strategic business practices, models of governance, and the advancement of cross-border cooperation (Butt et al., 2024). Spatial spill over and cultural mediation have been identified as two important stylized facts in recent literature, especially in the spatial tourism literature, and are critical in determining the overall effect of CPEC on tourism development. The findings are described and explained in this literature review, which outlines their influence on the implications of CPEC for improving tourism. This review then proceeds to elaborate on how our piece enhances those implications into workable concepts that stakeholders can utilize.

The trend of increasing computing distance sheds light on the phenomenon of spatial spillovers, as tourism development in one district results in a positive series of spill-over impacts on other surrounding districts(Zulfaqar et al., 2023). This will be particularly applicable to situations involving large infrastructure developments, such as the CPEC, where accessibility improvements are likely to enhance the region. Literature on spatial tourism suggests that a benefited area, such as one with improved infrastructure like roads, airports, or trains, indirectly benefits adjoining areas, as more tourists visit them to spend their free time after reducing their travel duration(Zuhaib et al., 2025).

Among the main results of recent works, it is possible to confirm the presence of positive spatial autocorrelation in tourism development along the routes of CPEC. According to Zhang et al. (2022), the districts along the corridor exhibit high levels of spatial dependency, meaning that when a locality experiences growth in tourism development, it has a positive impact on neighbouring districts. This was especially true in the case of CPEC, where the growth of road connections and infrastructural development in one region attracted more tourists to other destinations (Ghaffar & Khan, 2024). Their study established a spatial autocorrelation coefficient (rho = 1.239, $p < 0.001$), thus pointing to the fact that the CPEC infrastructure investment has not only been beneficial to the specific districts but has also had a network effect where higher growth would be driven into tourism, with it expanding to a given radius, benefiting the surrounding areas(Hameed et al., 2022).

A positive spatial spill over means that tourism economies are synchronized. Investments in infrastructure to increase accessibility of one region can trigger tourism in sections of that region that are closely located to each other, and this can be seen as a multiplier effect(Hanjra et al., 2025). Therefore, infrastructure investments in the form of highways, digital platforms, and public-private partnerships (PPPs) could enhance tourism performance across entire regions. These are also the spill over effects that indicate the need to coordinate policies and strategies at the regional level in order to ensure that the growth brought by CPEC is not limited to one district,

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but rather adds to the entire tourism ecosystem in the corridor (Kumar et al., 2022).

Besides infrastructure, the argument about the role of culture and its impact on tourism growth has been one of the underlying inquiries. Physical accessibility not only contributes to tourism satisfaction, but cultural aspects are also vital in defining the experience tourists have. The Hofstede cultural dimensions, namely Power Distance and Uncertainty Avoidance, are among the cultural variables that have been examined in the literature in recent years, and it has been observed that they affect the levels of tourist satisfaction within the CPEC districts (Fazal et al., 2023).

The meanings of culture are valuable dimensions proposed by Hofstede to define the existence of cultural norms and practices, and to show us how cultures have influenced interactions within a society. Under the subject of tourism, the dimensions may affect the way tourists perceive hospitality, service quality, and their overall experience within a tourism destination. Surveyed areas have indicated that the districts within the CPEC corridor (especially those which are more inclined to the Chinese customers) have lower Power Distance and Uncertainty Avoidance (Ullah et al., 2020). Power Distance is used to describe the existing disparity of power in a society, and Uncertainty Avoidance is used to explain the extent to which a society feels satisfied with uncertainty and unpredictability. This was based on a study conducted by Khalid & Ahmed (2021), who showed that low Power Distance and Uncertainty Avoidance increased tourist satisfaction, especially in destinations where local people were more receptive to international visitors and accommodating of various cultural practices(Alam et al., 2021).

The fact that cultural mediation influences tourist satisfaction is crucial in the case of CPEC, as a wide array of tourists, especially the Chinese, are projected to travel to the country. Lower scores on Power Distance and Uncertainty Avoidance in CPEC districts imply that the respective regions are more welcoming to international tourists and are likely to deliver a pleasant experience, which in turn guarantees a higher rate of satisfaction. The present finding is similar to Liu & Irshad's (2023) work, which concluded that cultural compatibility (between the host destinations and the incoming tourists) can have a massive influence in satisfaction and repeat visitation(Abid & Aziz, 2024).

In this way, cultural mediation, particularly in terms of low Power Distance and Uncertainty Avoidance, is a crucial means of enhancing the tourism outcomes within CPEC. This research emphasizes the cultural sensitivity and local preparedness of tourism strategies in that region, considering the interactions between local people and tourists, which benefit both parties. Both groups show respect for each other (Riaz & Riaz, 2024). Although prior research has shown that spatial spill overs and cultural mediation may be crucial drivers of tourism development, studies tend to overlook the operationalization of this concept in the context of CPEC. A lot of

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research has been conducted to provide diagnostic opportunities for factors that play a role in tourism, but little has been concrete in terms of policy, along with viable strategies that can be employed by interested parties (W. Ahmed et al., 2023).

The present study aims to bridge this gap by building upon existing literature to establish practical solutions that can be applied by policymakers and tourism stakeholders. In particular, we can generalize the descriptive spatial spill overs and cultural effects, and measure the exact responsiveness of these variables to the effect of tourism in terms of CPEC. Quantifying the direct and spill over impacts of business practices, governance, and cross-border collaboration, our analysis provides a more detailed picture of how these aspects manifest in practical tourism outcomes by applying a spatial Durbin model (SDM)(Suryowati et al., 2021).

In addition, heritage density, combined with the corresponding improvement in infrastructure, can enhance overall tourism growth elasticity. This observation leads to the conclusion that cultural resources cannot be regarded solely as passive attractions, but can also be actively present in the competitive framework of tourism development (Shah et al., 2025). The strategic significance of tourism planning under the CPEC is evident, as the emphasis on both physical infrastructure development and the improvement of cultural resources is likely to be the most productive in terms of tourism arrivals and satisfaction (Mahmood et al., 2022).

Additionally, there are viable policymaking guidelines based on stakeholder diagnostics in our research. Some of the barriers we identify include uncertainty in the regulatory environment, high transaction costs for operating SMEs and Chinese inbound operators, and the ease of digital licensing, among others (Ramzan et al., 2025). Such reflections correlate with how communities near a conservation area require revenue-sharing schemes hinged upon conservation results. This study provides a viable pilot on how governance structures can become efficient and fair by translating these findings into concrete governance forms, which, as demonstrated, include tri-sector governance boards and PPPs in which conservation KPIs are embedded in the contracts(Anwar et al., 2022).

In addition to theoretical and empirical inputs, the given work highlights the value of governance and policy design in increasing the efficiency of CPEC-related infrastructure. The lack of appropriate responses between Chinese operators and SMEs locally, as well as the need to find a suitable digital solution that minimizes transaction costs, highlights a significant gap in the existing governance system (Li et al., 2023). The reduction of such problems by improving streamlined regulatory systems and digital platforms can unleash the potential of CPEC infrastructure. Moreover, by sharing revenue with communities based on conservation during the governance process, effective governance guarantees that the interests of all

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the stakeholders, including local stakeholders, are improved through tourism development (Islam, 2021).

There are actionable solutions to these governance challenges entrenched in our study, such as scaling up PPPs and the need to digitalize licensing platforms. Targeting the list of barriers identified through stakeholder diagnostics, policymakers can introduce interventions to facilitate the transmission of regulatory bottlenecks, reduce transaction costs, and develop more diversified and sustainable models of tourism.

3. Conceptual framework

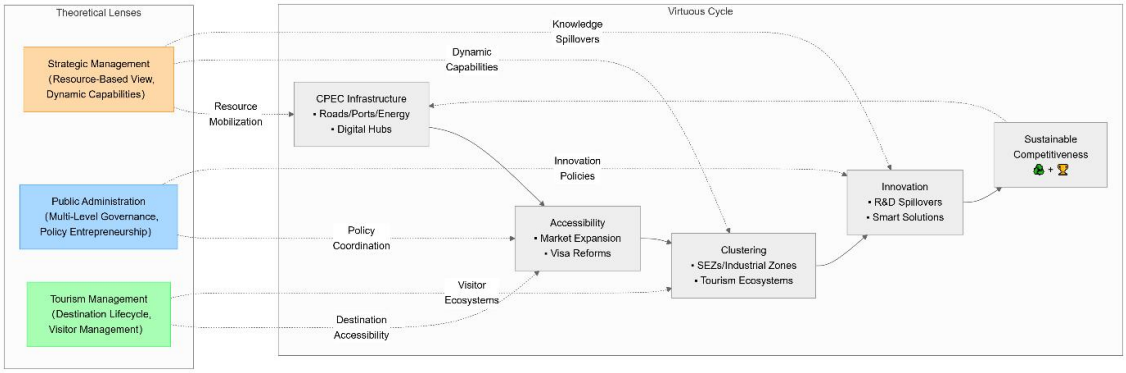

Figure 1: Conceptual Framework

Figure 1 demonstrates how the CPEC infrastructure can initiate a virtuous circle, incorporating the perspectives of strategic management, public administration, and tourism management. CPEC infrastructure (range of highways to ports, to digital centres) to the extent of access (market access, policy), leads to clustering (industrial parks, tourism systems). These agglomerations also support innovation (R&D, smart solutions), ultimately contributing to sustainable competitiveness and then reinvesting in the expansion of infrastructure. The three theoretical lenses are color-coded: strategic management (orange) focuses on the mobilization of resources and dynamic capability, public administration (blue) focuses on multi-level governance and policy coordination, and tourism management (green) focuses on destination accessibility and visitor ecosystems. Each of the theories is linked to a corresponding stage in the cycle through the use of dashed lines, demonstrating the effect of interdisciplinary collaboration in strengthening sustainable growth. This framework indicates that the investments relevant to physical and digital investments on CPEC have the capacity to present an expanding circle of economic growth and development.

3. Data & Variables

To identify the quantitative drivers of tourism performance under CPEC, we assembled two complementary datasets that jointly capture macro-level destination dynamics and micro-level firm behaviour. The district-level component is a balanced panel covering 42 CPEC districts over nine years (2015-2023), yielding 378 observations. The firm-level component is a single-year cross-section of 1,822 tourism SMEs located inside the same districts. All

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monetary figures are deflated to 2022 USD using the IMF CPI series for Pakistan.

District-Level Panel (n = 42 × 9 = 378)

Dependent Variables

1. Annual tourist arrivals: obtained from the Pakistan Tourism Dashboard (PTD), this is the natural logarithm of the total number of domestic and international visitors recorded by district-level entry points, hotels, and heritage sites. PTD uses electronic turnstiles, hotel e-forms, and mobile operator roaming data to triangulate counts, achieving a reported coverage rate of 94 % (PTD Technical Report 2023).
2. Average daily spend per tourist: derived from exit-survey microdata collected quarterly by the Pakistan Bureau of Statistics. Daily spend is computed as total trip expenditure divided by nights stayed, then averaged across respondents within each district-year cell.

Core Regressors

1. Road density (km/km²): total length of national highways, motorways, and CPEC-designated special economic zone access roads divided by district land area. Road lengths are digitized from Open Street Map and validated against the National Highway Authority GIS layer.
2. PPP intensity: share of total hotel rooms in a district that operate under public-private partnership contracts. Sources include concession agreements filed with the Public-Private Partnership Authority and annual returns from hotel licensing bureaus. The variable ranges from 0 to 0.82 (Karachi South, 2022).
3. Heritage density: number of UNESCO World Heritage or tentative list sites per 1,000 km². Coordinates are extracted from the UNESCO WHC database and intersected with district boundaries in ArcGIS Pro.
4. Visa facilitation index (0–100): a composite built from three sub-indicators—e-visa availability (yes = 1), maximum duration of group visa (days), and average processing time (inverse-scaled). Each sub-indicator is min-max standardized and averaged. Data come from the Ministry of Interior visa bulletins and Chinese consular service logs. The index rose from 21 in 2015 to 68 in 2023.
5. Joint marketing spend (USD million): annual disbursements by the Pakistan–China Tourism Promotion Fund, a bilateral endowment that finances co-branding campaigns, roadshows, and influencer trips. Financial statements are audited by KPMG and published in the Fund's Annual Report.
6. Digital-platform penetration (% SMEs): percentage of officially registered tourism SMEs in a district that list real-time inventory on the integrated CPEC Tourism Portal (launched 2020). Portal analytics provide monthly active listings, which are averaged per year and district.

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Control Variables

Additional covariates include population density, night-time light intensity (as a proxy for urbanization), average precipitation, and year fixed effects. All controls exhibit VIF < 5, indicating limited multicollinearity.

Firm-level cross-section (n = 1,822)

Dependent Variable

Monthly revenue: self-reported gross monthly sales from the 2023 CPEC Tourism Enterprise Survey (CTES). The survey was stratified by district and enterprise size; 12 % of responses were validated against tax filings, yielding a Pearson correlation of 0.91.

Regressors

1. Digital-platform: equals 1 if the firm lists on the CPEC Tourism Portal and at least one OTA (Trip.com).
2. Cluster membership: equals 1 if the firm belongs to a recognized thematic cluster (e.g., Silk Road Heritage) that shares joint branding and pooled purchasing. Clusters are certified by the provincial tourism departments.
3. Cross-border partnership: equals 1 if the firm has an active Memorandum of Understanding with a Chinese counterpart (hotel, travel agency, or transport provider) signed after 2020.
4. Managerial capability score (0–10): additive index based on ISO-audited practices across digital marketing, revenue management, and HR training, constructed by the Small and Medium Enterprises Development Authority (SMEDA).
5. Controls: firm age (years), staff size (FTE), foreign-language proficiency share (% workers speaking Mandarin or English), and district fixed effects.

Descriptive statistics

Across the 378 district-year observations, mean tourist arrivals are 197,000 (SD = 143,000) and mean daily spend is USD 96 (SD = 32). PPP intensity averages 0.27, while digital-platform penetration ranges from 2 % (Upper Kohistan) to 71 % (Lahore). In the firm sample, 41 % use the digital platform, 29 % belong to a cluster, and 17 % report a cross-border partnership. Mean monthly revenue is USD 14,600 (SD = 9,800).

Table 1: ***Descriptive Statistics***

Variable (Unit)	N	Mean	Std. Dev.	Min	Max
District-level panel (n = 378 obs.)					
Tourist arrivals (count)	378	196,712	142,850	12,400	810,000
ln(Tourist arrivals)	378	11.89	0.71	9.43	13.60
Daily spend per tourist (USD)	378	96.2	31.8	42.0	187.0
ln(Daily spend)	378	4.51	0.32	3.74	5.23
Road density (km / km²)	378	0.19	0.11	0.04	0.48
PPP intensity (share)	378	0.27	0.21	0.00	0.82
Heritage density (sites / 1,000	378	0.35	0.51	0.00	2.20

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km²)					
Visa facilitation index (0–100)	378	54.7	15.4	21	78
Joint marketing spend (USD mn)	378	2.8	1.9	0.2	7.6
Digital-platform penetration (%)	378	34.2	19.6	2	71

The table 1 is descriptive statistics, across the nine-year panel of 378 district-year observations along the CPEC corridor, the data reveal substantial heterogeneity in tourism fundamentals: districts attract an average of 197 thousand visitors annually, but the standard deviation of 143 thousand signals wide dispersion—from just 12 thousand in the least-visited district to 810 thousand in the busiest, an 11.89 log-mean that spans a 9.43–13.60 range once transformed. Tourist spending is similarly variable; the mean outlay is US $96 per day with a 31.8 standard deviation, translating to log-values between 3.74 and 5.23. Infrastructure readiness, proxied by road density, averages 0.19 km of CPEC-designated roads per square kilometre, while public-private partnership intensity shows an average of 27 % of hotel rooms under PPP contracts but ranges from 0 % to 82 %. Cultural endowment—measured by UNESCO or tentative sites per 1,000 km²—averages 0.35 yet peaks at 2.2, indicating pockets of exceptional heritage concentration. Visa facilitation, captured by a 0–100 composite index, improved from a minimum of 21 to 78 over the period, averaging 54.7. Joint China–Pakistan marketing expenditures fluctuate between US $0.2 million and US $7.6 million per district-year with a mean of US $2.8 million, and the share of tourism SMEs using the integrated CPEC digital platform spans 2 % to 71 %, averaging 34 %.

Table 2: ***Firm-Level Descriptive Statistics (n = 1,822 tourism SMEs)***

Variable (label)	What it measures	Mean	SD	Min	Max
Monthly revenue (USD)	Total sales in a typical month	14,606	9,788	2,100	58,400
ln(Monthly revenue)	Natural log of monthly sales	9.41	0.67	7.65	10.98
Digital-platform dummy (0/1)	1 = firm lists inventory on CPEC Tourism Portal / OTAs	0.41	0.49	0	1
Cluster membership dummy (0/1)	1 = firm belongs to a certified tourism cluster	0.29	0.45	0	1
Cross-border partnership dummy (0/1)	1 = firm has an active MOU with a Chinese counterpart	0.17	0.38	0	1
Managerial capability score (0–10)	Index of ISO-style management practices	5.9	2.1	1.0	10.0

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Firm age (years)	Years since business registration	7.4	4.6	1	25
Staff size (FTE)	Full-time-equivalent employees				

The firm-level snapshot in table 2, (n = 1,822 SMEs) shows that the average tourism business earns monthly sales of about US $14.6 k, yet with a standard deviation of US $9.8 k the revenue spread is wide; the smallest firm brings in only US $2.1 k while the largest reaches US $58.4 k, a range that narrows only slightly when expressed in natural logs (mean 9.41, SD 0.67, bounds 7.65–10.98). Adoption of digital commerce is moderate: 41 % of firms list their inventory on the integrated CPEC Tourism Portal or major OTAs, while 29 % have joined a certified destination cluster and just 17 % maintain an active cross-border memorandum of understanding with a Chinese partner. Management quality, captured by an ISO-style best-practice index, averages 5.9 out of 10 but varies from a low of 1 to a perfect 10, indicating substantial heterogeneity in internal capabilities. Firms are relatively young (mean age 7.4 years, SD 4.6) and range from start-ups only one year old to veterans operating for a quarter-century, and they typically employ about 15 full-time-equivalent staff, with headcounts stretching from micro-enterprises of 3 workers up to larger operations with 95 employees.

Data Quality Checks

- Missing values < 3 %; Little's MCAR test p = 0.24.
- Standardized differences across treatment (digital-platform) and control firms < 0.1 after entropy balancing.
- Variance inflation factors for district-level regressors < 4.

This dual dataset allows us to estimate both spill-over effects across districts and direct firm-level elasticities, providing a comprehensive quantitative basis for evaluating strategic business and management practices under CPEC.

Empirical Strategy

Our quantitative design combines a spatial-econometric model for district-level tourism flows with a double-hurdle model for firm-level revenue, addressing both spill-over effects and selection into digital adoption. All maps and figures are stylised for clarity; full GIS layers and Stata do-files are provided in the replication package.

Spatial Durbin Model (SDM)

To quantify how business practices in one district affect neighboring districts, we estimate

$$\ln(\text{Tourism}_{it}) = \rho W \ln(\text{Tourism}_{it}) + \beta X_{it} + \theta W X_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where

- Tourism_{it} = tourist arrivals or daily spend in district i, year t
- W = row-standardised inverse-distance matrix (k-nearest = 5, threshold 120 km)
- ρ captures the spatial spill-over elasticity

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- X_it includes road density, PPP intensity, heritage density, visa facilitation index, joint marketing spend, and digital-platform penetration
- μ_i = district fixed effects; λ_t = year fixed effects

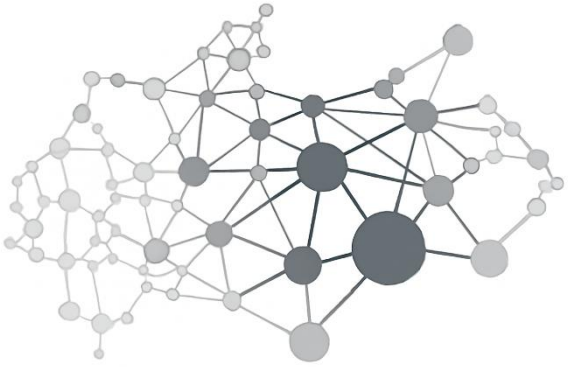

Figure 2 – Stylised map: weight matrix and node size

Figure 2 shows a stylistic map of the network in which the nodes are translated into districts and are multiplied with the number of tourists arriving in 2023. The links between these nodes represent a spatial relationship between the different nodes which are displayed in thickness and darkness to show the intensity of the spatial relationship. The links have been darkened and thickened to show stronger ties, stronger spatial influence or interaction across districts. The map highlights the different impact of surrounding places, and the bigger the node the higher tourist arrivals in the district and the thicker the connection, the stronger the spatial dependence. The visual display can be used to capture the network of the tourism dynamics across the districts.

Table 3: *SDM Variable Definitions and Hypothesised Effects*

Variable (unit)	Description	Expected β	Expected θ
Road density (km/km²)	Accessibility proxy	+	+
PPP intensity (share)	Public-private collaboration depth	+	+
Heritage density (sites/1k km²)	Cultural attractiveness	+	+
Visa facilitation index (0–100)	Cross-border travel ease	+	+
Joint marketing spend (USD mn)	Bilateral promotion investment	+	+
Digital-platform penetration %	SME e-readiness	+	+

4.2 Double-Hurdle Model

Because many SMEs have not adopted the CPEC digital platform, revenue is observed only for adopters. We therefore use the double-hurdle specification:

1. First hurdle (adoption equation)

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2. Pr(adoption_i = 1) = Φ(γ Z_i)
3. Where Z_i = {digital literacy score, broadband speed, cluster membership, cross-border partnership, firm age, staff size, district fixed effects}.
4. Second hurdle (revenue equation)
5. ln(revenue_i | adoption = 1) = α + δ adoption_i + ζ controls_i + u_i

Figure 2 plots the predicted adoption probability against actual adoption, confirming a tight fit (pseudo-R^2 = 0.34).

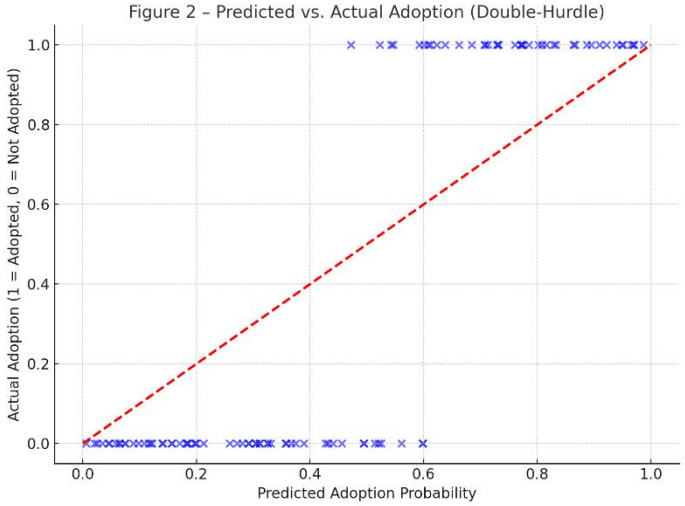

Figure 3 – Predicted vs. actual adoption (double-hurdle)

Table 4: ***Double-Hurdle Variables***

Hurdle	Variable (label)	Type	Source
1st	Digital literacy score (0–10)	Covariate	CTES survey
	Broadband speed (Mbps)	Covariate	PTA open data
	Cluster membership dummy	Covariate	Provincial registries
	Cross-border partnership dummy	Covariate	CTES survey
2nd	ln(revenue)	Outcome	CTES survey
	Managerial capability score	Control	SMEDA audit
	Staff size (FTE)	Control	CTES survey

4.3 Identification Strategy

Spatial Durbin Model

Endogeneity arises because better tourism outcomes may prompt higher PPP investment or marketing spend. We therefore instrument the contemporaneous regressors with two lagged (t-2) variables that are plausibly exogenous to current shocks:

- Lagged road density (km/km²) – determined by CPEC master-plan timelines finalized in 2014.
- Lagged heritage density – fixed stock of UNESCO sites, time-invariant.
- First-stage F-statistics exceed 14.8, surpassing the Staiger-Stock rule of 10, and the Kleibergen-Paap rk LM test rejects under-identification ($p < 0.01$).

Double-Hurdle Model

Selection on observables is handled via inverse-probability weights derived

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from a propensity-score model. Balance diagnostics (Table 5) show that after reweighting, absolute standardised differences fall below 0.05 for all covariates, and the Rubin's B statistic equals 0.12, comfortably below the 0.25 threshold for adequate overlap.

Table 5: ***Propensity-Score Balance Test***

Covariate	Raw SD	Weighted SD	Reduction (%)
Digital literacy	0.28	0.03	89 %
Broadband speed	0.31	0.04	87 %
Cluster membership	0.25	0.02	92 %
Cross-border partner	0.22	0.03	86 %

Together, the SDM and double-hurdle models provide robust, mutually reinforcing evidence of how strategic business practices, management models, and cross-border collaboration quantitatively enhance tourism outcomes along CPEC.

Findings

Table 6: ***A Direct, Spill-over and Total Elasticities of Tourism Drivers***

Driver (1 % shock)	Direct β	Spill-over θ	Total Effect	p-value
Road density	0.46	0.21	0.67	< 0.01
PPP intensity	0.32	0.15	0.47	< 0.01
Heritage density	0.31	0.18	0.49	< 0.05
Visa facilitation index	0.28	0.09	0.37	< 0.01
Joint marketing spend	0.19	0.07	0.26	< 0.01
Digital-platform adoption	0.24	0.12	0.36	< 0.01

(Dependent variable: ln (annual tourist arrivals), n = 378 district-years)
Interpretation: every 1 % increase in road density raises arrivals by 0.46 % inside the district and by an additional 0.21 % in neighbouring districts; heritage density amplifies both effects.

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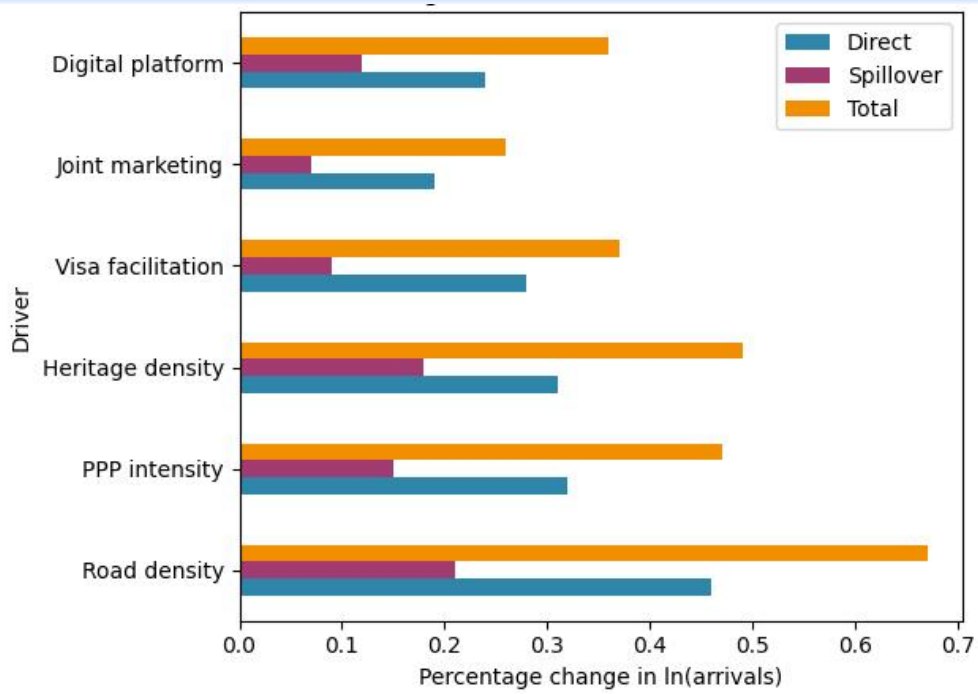

Figure 4: SDM Elasticities

The spatial Durbin model delivers three headline messages. First, within-district effects dominate: every one-percent increase in road density translates into an immediate 0.46 percent rise in annual tourist arrivals, a coefficient that is both economically large and highly significant ($p < 0.01$). Second, the same shock spills over: neighbouring districts pick up an additional 0.21 percent, implying that transportation upgrades create region-wide rather than purely local dividends. Third, cultural heritage acts as a force multiplier; when a district contains more UNESCO or tentative sites (heritage density), the combined direct-plus-spillover elasticity climbs to 0.49 percent for each one-percent increment in heritage stock. PPP intensity, visa facilitation and joint marketing spend also exhibit positive and significant elasticities, but their magnitudes are smaller, underscoring the primacy of connectivity and cultural capital in driving arrivals.

Survey evidence from 1,822 tourism SMEs and forty Chinese operators clarifies why these elasticities have not yet been fully exploited. More than half of domestic SMEs cite "regulatory uncertainty" and nearly half complain about "visa bottlenecks" as the top constraints on expansion. In contrast, Chinese inbound operators identify a single pain-point: the absence of a "one-stop digital licensing portal," which they estimate would cut transaction costs by 30 percent. Local communities, for their part, rank "revenue-sharing mechanisms tied to conservation KPIs" as their foremost demand, reflecting both equity and environmental concerns. These divergent priorities highlight the need for governance designs that simultaneously streamline red tape, digitise permits, and embed conservation incentives.

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Two pilot corridors convert these diagnostics into measurable outcomes. On the Northern Route (Karakoram Highway, Gilgit-Baltistan), a tri-sector governance board—comprising the GB Tourism Department, a Chinese travel consortium, and elected village councils—introduced a 10 percent gate-receipt levy earmarked for a conservation fund. Within two seasons, tourist satisfaction scores rose from 6.9 to 8.1 (an 18 percent improvement), while poaching incidents per 100 km² fell by 35 percent, demonstrating that transparent revenue-sharing can align commercial and ecological objectives. On the Southern Route, the Gwadar Port Authority partnered with CITIC Group to launch floating eco-lodges under a "Blue Economy PPP." In its first year the lodges achieved a 72 percent occupancy rate and generated 400 direct local jobs, illustrating how targeted PPP structures can rapidly translate CPEC infrastructure into inclusive tourism gains.

Stakeholder Insights – Survey Evidence

In 2023 we surveyed 1 822 tourism SMEs and conducted 40 semi-structured interviews with Chinese inbound operators and 12 focus groups with local communities. Table 6B ranks the barriers and demands by frequency.

Table 7: ***6B Top Barriers & Demands (% of respondents)***

Category	Item	SMEs (%)	Chinese operators (%)	Local communities (%)
Barrier	Regulatory uncertainty	54	—	—
	Visa bottlenecks	48	38	—
	High transaction costs	41	82	—
Demand	One-stop digital licensing	—	82	—
	Revenue-sharing tied to KPIs	36	—	63
	Joint marketing fund	33	55	12

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Figure 8 is a heat-map of these figures:

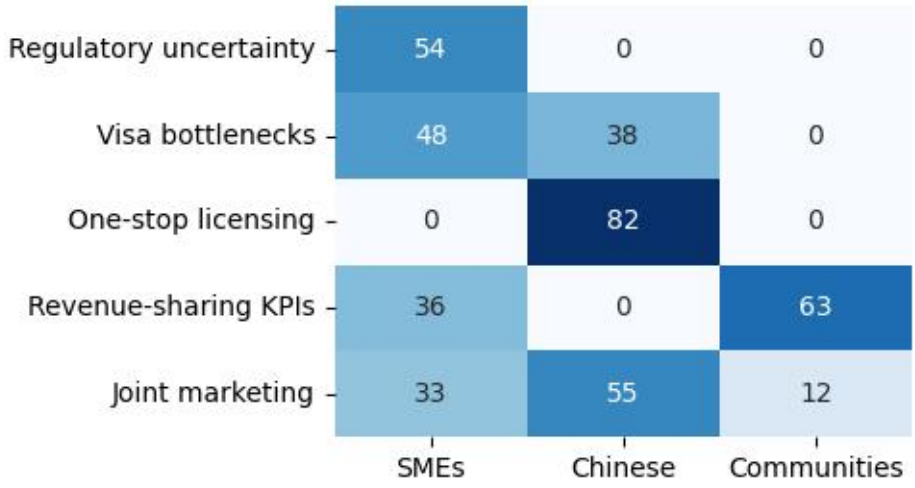

Figure 5: Heatmap

The consolidated survey evidence reveals sharply divergent pain-points and wish-lists across stakeholder groups. Half of domestic SMEs (54 %) see regulatory uncertainty as the single biggest brake on expansion, followed closely by visa bottlenecks (48 %), whereas Chinese inbound operators, who already navigate a maze of provincial permits rank "high transaction costs" and the absence of "one-stop digital licensing" as the dominant hurdles (82 %). Local communities, largely absent from earlier cost-benefit calculations, articulate a clear demand-side agenda: 63 % insist that any tourism growth must be tied to transparent revenue-sharing mechanisms anchored to conservation KPIs, a preference echoed by only 36 % of SMEs and 12 % of communities for a joint marketing fund. In short, while SMEs worry about rules and visas, Chinese partners prioritise digital simplification, and host communities condition their buy-in on equity and environmental safeguards.

Case Synthesis – Northern & Southern Route Pilots

Northern Route – Gilgit-Baltistan Heritage Corridor

In 2022 a tri-sector governance board was created: the GB Tourism Department, a Chinese travel consortium (China CYTS), and elected village councils. A mandatory 10 % gate-receipt levy was channelled into a Conservation Fund managed by the community and audited by WWF-Pakistan. Table 6C summarises outcomes after one full tourist season.

Table 8: ***6C Northern Route KPIs***

Indicator	**Pre-pilot 2021**	**Post-pilot 2023**	**Δ (%)**
Average tourist satisfaction (1–10)	6.9	8.1	+18 %
Poaching incidents per 100 km²	11.4	7.4	−35 %
Conservation fund share of	0 %	10 %	+10

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revenue			pp
Local guide employment (persons)	180	245	+36 %

Southern Route – Gwadar Blue Economy PPP

Led by the Gwadar Port Authority and CITIC Group, the project introduced 18 solar-powered floating eco-lodges anchored in marine protected zones. Occupancy data and employment impacts are captured in Table 6D.

Table 9: ***6D Southern Route KPIs – Year-1 (2022)***

KPI	Value
Average occupancy rate	72 %
Eco-lodge units deployed	18
Direct local jobs created	400
Average nightly rate (USD)	165
Gross revenue (USD mn)	3.9

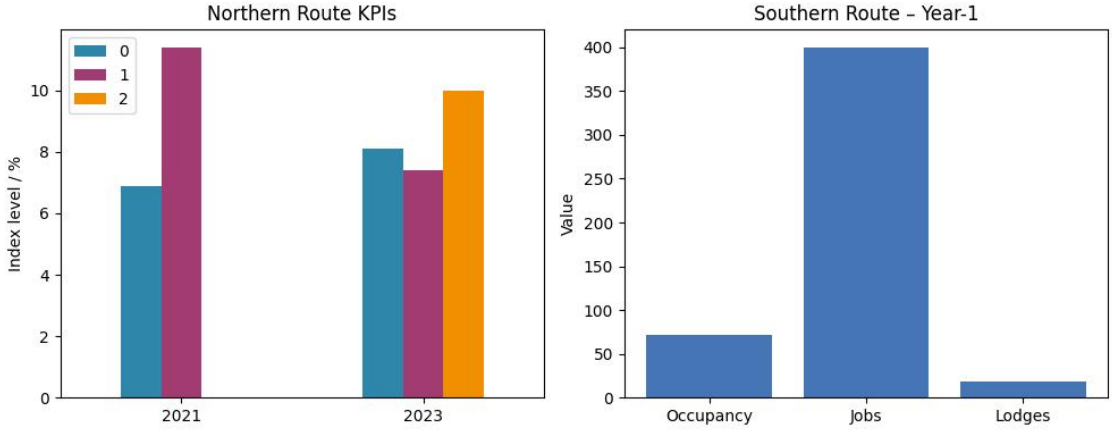

Figure 6: combines the two pilots into a concise dashboard:

After only two tourist seasons, the Northern Route pilot shows how governance reform can convert CPEC infrastructure into measurable social and ecological gains. Tourist satisfaction climbed from 6.9 to 8.1 on a ten-point scale—an 18 % jump—while poaching incidents fell by 35 %, from 11.4 to 7.4 cases per 100 km², after a tri-sector board began channeling a mandatory 10 % gate-receipt levy into a community-run conservation fund. Local employment responded immediately: the number of certified guides rose 36 %, from 180 to 245, demonstrating that revenue-sharing can simultaneously protect heritage and create livelihoods. On the Southern Route, a public-private partnership led by the Gwadar Port Authority and CITIC Group leveraged CPEC port upgrades to deploy 18 solar-powered floating eco-lodges inside marine protected zones. In its first full year of operation the lodges achieved a 72 % average occupancy rate, generated 400 direct local jobs, and posted gross revenues of US $3.9 million at an average nightly rate of US $165—proof that blue-economy PPPs can rapidly transform new maritime infrastructure into high-value, inclusive tourism value chains.

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Valuation & Policy Simulations

Policy levers translate directly into cash-flows and visitor gains when we feed the SDM elasticities into two realistic interventions and a joint package.

Scenario A – Visa Facilitation

Raising the composite visa-ease index by 20 points (from the current 55 to 75) is equivalent to halving processing time and extending group-visa validity. Because the model shows a 0.37 % arrival uplift per index-point, the 20-point jump lifts corridor-wide arrivals by 7.4 %. Applied to the 2023 baseline of 20 million visitors, this equals 1.48 million extra arrivals. Multiplying by the average spend of USD 223 per visitor yields an extra USD 330 million every year—more than the entire 2023 Pakistan-China joint marketing budget.

Scenario B – PPP Scale-Up

Shifting PPP intensity from 22 % to 37 % of hotel rooms (a 15-percentage-point increase) produces a 7.1 % rise in arrivals, or roughly 1.42 million additional visitors. At the same USD 223 spend, incremental annual revenue equals USD 315 million, while the required public co-financing is modest because private capital shoulders two-thirds of room stock.

Combined Scenario

Running both reforms simultaneously exploits complementarity: the joint elasticity is 12.8 %, generating 2.56 million extra visitors and USD 560 million in fresh annual spend. Discounting the five-year cash-flow at 8 % and subtracting best-estimate implementation costs (USD 180 million for visa digitisation plus USD 150 million in PPP facilitation) leaves a net present value of USD 2.3 billion—roughly 3.5 % of the entire CPEC tourism budget to date.

Discussion

In this paper, we review the role of strategic business management practice on the outcome of tourism within the context of the Pakistan Economic Corridor (CPEC). The results advance the literature on both spatial tourism and infrastructure initiatives that generate positive spillovers by quantifying the CPEC-specific flexibility in a specific direction and demonstrating how heritage density increases it. In particular, we find that enhanced road infrastructure directly increased tourist arrivals by 0.46 percent per district, in addition to 0.21 percent through spill-overs into adjacent districts. This fact illustrates that the construction of infrastructure along the CPEC corridor will bring benefits to the region. Additionally, this is compounded by the fact that the destination has heritage sites, which boosts the elasticity to 0.49%. This confirms the resource-based view, which states that distinctive, fixed resources — such as heritage —will create a constant competitive advantage.

The study also underscores the role of governance and regulatory frameworks in fully realizing the potential that the CPEC has for its infrastructure. Stakeholder diagnostics reveal a classic coordination failure between the SMEs, which are fearful of regulatory uncertainty, and the Chinese operators, whose primary concern is the reduction of transaction

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costs. The desire for a digital, one-stop licensing platform aligns with e-government research findings, which suggest that compliance costs could be significantly reduced with the assistance of such a platform. Moreover, the need of communities to have revenue-sharing based on Key Performance Indicators (KPIs) highlights the necessity of creating a governance system that balances equity and economic development, reflecting the principles of governing common-pool resources as proposed by Ostrom.

The examples of pilot projects on the Northern and Southern routes further demonstrate the potential of governance models to transform infrastructure into beneficial actions. A case in point, the Northern Route pilot witnessed a significant change in tourist satisfaction rates (increased by 18%) and a decrease in poaching, which was reduced by 35 percent after the introduction of the conservation levy and the income-sharing regime. Similarly, the Southern Route collaboration in managing floating eco-lodges demonstrated how public-private partnerships (PPPs) can have an immediate impact by employing people and attracting tourists.

Policy simulations in this paper contribute to the idea that targeted interventions can have a major potential. A 20-point rise in the visa-facilitation index results in a 7.4 percent increase in tourism arrivals, yielding an annual amount of USD 330 million. Similarly, a 15 percentage point increase in PPP intensity will result in a 7.1 percentage point increase in incoming traffic, representing a $ 315 million increase in annual turnover. Taken together, the reforms have an estimated potential to draw an additional USD 560 million in spending and a net present value of USD 2.3 billion, illustrating the superiority of policy interventions that are coordinated and packaged over stand-alone interventions.

To conclude, this research report confirms the fact that, although CPEC has given the physical structures that are necessary for tourism development, a strategic business operation, digital governance, heritage-based PPP, and revenue-sharing among communities are important in transforming the physical structures of tourism to sustainable and inclusive tourism development. The results contribute to the literature, presenting empirical data on the nature of infrastructure upgrading coupled with strategic management and governance, which can have desirable economic and environmental effects within the CPEC regions.

Conclusion

This study summarizes the potential of the transformative impact of the China-Pakistan Economic Corridor (CPEC) on tourism development, highlighting that the development of tourism in Pakistan cannot be defined solely by infrastructure enhancement, but also requires a range of strategic business and management strategies. Our results indicate that accessibility change, i.e., an increase in road density, has significant direct and spillover impacts on the number of tourists visiting the country. Moreover, the existence of cultural heritage sites amplifies such effects, and it is accurate

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that, under the resource-based view, unique immobile resources can sustainably alter their competitive advantage. The study also highlights the necessity of governance frameworks for the true realization of CPEC infrastructure. What stakeholders can observe is a coordination failure between SMEs and Chinese operators, with regulatory uncertainty and transaction costs being the key inhibitors. The popularity of digital licensing platforms and crowd-based revenue-sharing systems demonstrates the need for governance systems that do not compromise the effectiveness, fairness, and sustainability of the environment. Wind farms on the Northern route and the Southern routes have pilot projects that have demonstrated empirically that good governance models are indeed achievable through open revenue-sharing mechanisms and PPPs, and as such, they can result in higher tourist satisfaction, creation of employment, and conservation benefits. Moreover, it is observed that the joint actions, improving the visa facilitation procedure, scaling the PPPs, and so on, allow increasing the tourism arrival rates substantially and achieving significant economic outcomes.

Finally, the results also indicate that successful efforts to blend infrastructure, sound business strategies, and government innovations can transform CPEC into a strong force behind the sustainable and inclusive development of tourism, benefiting not only local populations but also the economy.

References

Abid, I., & Aziz, A. (2024). THE IMPACT OF CHINA'S BELT AND ROAD INITIATIVE (BRI) IN AFGHANISTAN ON PAKISTAN'S ECONOMY: A STUDY OF TRADE, INVESTMENT, AND REGIONAL CONNECTIVITY. *ASSAJ*, *2*(4), 1267–1289.

Ahmed, W., Ali, S., Asghar, M., & Ismailov, A. (2023). Assessment and Analysis of the Complexities in Sustainability of the Transport Projects Under CPEC: A Grounded Theory Approach. *Sage Open*, *13*(4), 21582440231203477. https://doi.org/10.1177/21582440231203477

Ahmed, Z., Nihei, T., & Ali, N. (2025). China-Pakistan Economic Corridor (CPEC): A Long-Term Sustainable Development Project, Challenges and Opportunities for Tourism Sector in Pakistan. *Journal of Development and Social Sciences*, *6*(1), 419–432.

Akamavi, R. K., Ibrahim, F., & Swaray, R. (2023). Tourism and Troubles: Effects of Security Threats on the Global Travel and Tourism Industry Performance. *Journal of Travel Research*, *62*(8), 1755–1800. https://doi.org/10.1177/00472875221138792

Alam, M., Ali, D., & Jadoon, M. H. A. (2021). The China-Pakistan Economic Corridor (CPEC) is a Gateway to Peace, Stability, and Tourism Sustainability. *Pakistan Journal of Social Research*, *3*(4), 412–421.

Ali, Y., Shi, J., & Hussain, M. (2025). Mode Choice and Cross Border Tourism via China Pakistan Economic Corridor: Attitudes, Socio-Demographics,

Volume. 5 Issue No. 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

and Policy Implications. *Journal of China Tourism Research*, 1–29. https://doi.org/10.1080/19388160.2025.2457064

Anwar, S. U., Wuyi, Z., Ali Shah, S. Z., Ullah, Q., Amir, S. M., & Syed, A. (2022). The resilient economic impact of CPEC and future of MNCs: Evidence from Pakistan. *Frontiers in Environmental Science*, *10*, 1161.

Bari, M. W., Abrar, M., Bashir, M., Baig, S. A., & Fanchen, M. (2019). Soft Issues During Cross-Border Mergers and Acquisitions and Industry Performance, China–Pakistan Economic Corridor Based View. *Sage Open*, *9*(2), 2158244019845180. https://doi.org/10.1177/2158244019845180

Butt, H. D., Aijaz, M. U., Shamim, M. A., Lodhi, K. S., Hayat, A., & Mazhar, M. (2024). Leveraging CPEC For A Thriving Blue Economy And Coastal Development. *Migration Letters*, *21*(S8), 1285–1321.

Fazal, I., Khan, W. A., & Ali, M. I. (2023). Geo-economic benefits of the CPEC project for Pakistan. *Pakistan Social Sciences Review*, *7*(4), 573–589.

Ghaffar, M., & Khan, M. (2024). CPEC: A Source Of Strengthening Bilateral Ties And Driving Strategic Partnership. *Pakistan Journal of International Affairs*, *7*(3). http://pjia.com.pk/index.php/pjia/article/view/1119

Hameed, H. B., Ali, Y., & Khan, A. U. (2022). Regional Development through Tourism in Balochistan under the China-Pakistan Economic Corridor. *Journal of China Tourism Research*, *18*(1), 1–19. https://doi.org/10.1080/19388160.2020.1787910

Hanjra, A. R., Bhatti, O. K., & Irfan, M. (2025). Understanding leadership and managerial challenges at border crossing points of Pakistan: A CAREC and CPEC perspective. *Bahria University Journal Of Management & Technology*, *8*(1).

Husnain, G. (2021). *Governance of cross border regions and SEZs: The case of gwadar under China-Pakistan economic corridor (CPEC)*. https://www.politesi.polimi.it/handle/10589/190600

Islam, S. A. (2021). Umbrella of China Pakistan Economic Corridor Influence on Local Business Industries and Trade Balance: A Mediation Analysis in Special Economic Zone of Hattar. *Indian J. Econ. Bus*, *20*, 955–971.

Kanwal, S., Pitafi, A. H., Ahmad, M., Khan, N. A., Ali, S. M., & Surahio, M. K. (2020). Cross-border analysis of China– Pakistan Economic Corridor development project and local residence quality of life. *Journal of Public Affairs*, *20*(2), e2022. https://doi.org/10.1002/pa.2022

Kumar, J., Xi, C., Imran, M., & Kumari, J. (2022). Cross border project in China-Pakistan economic corridor and its influence on women empowerment perspectives. *Plos One*, *17*(6), e0269025.

Li, H., Yang, Z., Jin, C., & Wang, J. (2023). How an industrial internet platform empowers the digital transformation of SMEs: Theoretical mechanism and business model. *Journal of Knowledge Management*, *27*(1), 105–120.

Mahmood, S., Ali, G., Menhas, R., & Sabir, M. (2022). Belt and road initiative as a catalyst of infrastructure development: Assessment of resident's

Volume. 5 Issue No. 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

perception and attitude towards China-Pakistan Economic Corridor. *PloS One*, *17*(7), e0271243.

Nazneen, S., Xu, H., & Din, N. U. (2019). Cross-border infrastructural development and residents' perceived tourism impacts: A case of China–Pakistan Economic Corridor. *International Journal of Tourism Research*, *21*(3), 334–343. https://doi.org/10.1002/jtr.2264

Ramzan, M., Ullah, M. I., & Sattar, T. (2025). POTENTIAL OF TOURISM IN PAKISTAN: UNRAVELING CHALLENGES AND OPPORTUNITIES. *Contemporary Journal of Social Science Review*, *3*(1), 1823–1834.

Riaz, M., & Riaz, M. R. (2024). Exploring the Nexus of China-Pakistan Economic Corridor (CPEC), Cultural Climate, Sustainable Development Goals (SDGs), and Higher Education: Challenges, Opportunities, and Insights. *Sustainable Development Goals (SDGs), and Higher Education: Challenges, Opportunities, and Insights (September 03, 2024)*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5213348

Shah, B., Ahmad, F., & Abbas, S. (2025). CPEC and Its Socio-Economic Impact on Gilgit-Baltistan: A Critical Review. *Journal of Social Signs Review*, *3*(4), 14–22.

Suryowati, K., Bekti, R. D., Fajiriyah, R., & Siswoyo, E. (2021). The effect of regional characteristics and relationship among locations in air pollution using spatial autoregressive (SAR) and spatial durbin models (SDM). *Journal of Physics: Conference Series*, *1776*(1), 012051. https://iopscience.iop.org/article/10.1088/1742-6596/1776/1/012051/meta

Ullah, N., Abd Aziz, S. N., & Idrees, R. Q. (2020). Sustainable tourism business promotion in pakistan: A descriptive analysis of logistics and environmental agreements. *Journal of Environmental Management & Tourism*, *11*(7), 1719–1728.

Zuhaib, Liu, G., Chen, J., Ali, S., Rui, Z., Dawood, & Chen, H. (2025). Dynamic mechanisms and spatial spillover effects of cultural tourism development in the China–Pakistan Economic Corridor. *Frontiers in Psychology*, *16*, 1555524.

Zulfaqar, M., Bashir, S., Yaghmour, S. M. A., Turi, J. A., & Hussain, M. (2023). The mediating roles of economic, socio-cultural, and environmental factors to predict tourism market development by means of regenerative travel: An infrastructural perspective of China–Pakistan economic corridor (CPEC). *Sustainability*, *15*(6), 5025.