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Unlocking Peripheral Tourism Potential: Reimagining Air Connectivity through Public Service Obligations as Peripheral Region Development Catalysts

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ABSTRACT

This study examines the potential of Public Service Obligations (PSOs)—policies ensuring minimum air connectivity—in supporting place-based tourism development in peripheral regions. The paper reveals a misalignment between current PSO provisions and tourism needs through mixed-methods research conducted across three peripheral regions in the UK. Findings identify significant gaps in network connectivity, frequency, and service quality as barriers to tourism development. The study advocates for re-envisioning PSOs as tools to stimulate tourism demand. The research demonstrates how tourism-focused enhancements to PSO design could significantly enhance the appeal of peripheral destinations to high-value tourism segments. Theoretical contributions conceptualise air connectivity policies as instruments for place-based tourism development and for alleviating core-periphery imbalances. Simultaneously, practical implications offer strategies for aligning PSOs with tourism goals to stimulate economic growth in peripheral regions.

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Air transport; tourism; peripheral regions; PSOs; United Kingdom

1. Introduction

Public Service Obligations (PSOs) are regulatory instruments that protect air connectivity on commercially unviable routes (EU, 2017). They aim to maintain connectivity, affordability, frequency, and capacity on routes vital for regional development, particularly for peripheral regions characterised by low population density and declining industrial economies. Through PSOs, national and local governments can regulate competition or provide financial subsidies to airlines, offsetting losses on commercially weak but socially important routes (EU, 2017).

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The evolution of air connectivity in peripheral regions has been significantly shaped by market liberalisation. Prior to 1992, European governments ensured connectivity through direct operating subsidies or cross-subsidisation on profitable routes operated by national carriers (Barrett, 2000). Post-liberalisation, while introducing competitive market forces, also led to reduced passenger options, compromised service quality, and increased fares in peripheral regions (Brathen & Eriksen, 2018). Recognising these challenges, the EU established PSOs as a regulatory tool to preserve vital air connectivity for regions at risk of exclusion. PSOs have been imposed on 165 routes across the EU in 2024 (EU, 2017). These peripheral regions face significant connectivity challenges due to a lack of demand required for airlines to achieve profitability (Calzada & Fageda, 2014). Geographic isolation further hinders their development, necessitating unique approaches. Their distance from economic centres, limited accessibility, and distinct features present both obstacles and opportunities for tourism (Brathen & Eriksen, 2018). Therefore, in addition to supporting economic development, PSOs play a critical role in promoting territorial cohesion by ensuring peripheral regions have access to essential services and remain connected to broader social and economic networks (Paraschi et al., 2022). The economic, social and regional development benefits of territorial cohesion through PSOs within the EU have been demonstrated in several peripheral regions (Raya et al., 2020).

Despite their widespread implementation, the potential of PSOs to catalyse broader economic benefits, particularly in tourism development (Papatheodorou, 2021), remains relatively underexplored. Existing research primarily addresses PSO implementation and operations, largely neglecting their potential impact on tourism development (Calzada & Fageda, 2014; Merkert & O'Fee, 2016; Williams & Pagliari, 2004). While prior research acknowledges PSOs' role in maintaining connectivity (Crescenzi & Rodríguez-Pose, 2012; Laird & Mackie, 2014; Reynolds-Feighan, 1996), addressing the knowledge gap of how PSOs can effectively facilitate tourism growth in peripheral regions, and the conditions for maximising tourism-driven demand, presents a significant opportunity. For example, strategically leveraging tourism trends could enable PSO routes to transition away from ongoing subsidy dependence, offering substantial public benefits such as unlocking opportunities for regional tourism development while alleviating fiscal pressure on local government. Moreover, favourable market conditions and tourism-focused route modifications could lead to full commercial viability challenging the current presumption that PSO routes must remain subsidised (Merkert & O'Fee, 2013).

The current context for PSOs is particularly complex due to post-COVID-19 fiscal pressures on governments (IMF, 2021), making PSO funding face increasing public scrutiny. However, this challenge is balanced by emerging opportunities: post-pandemic trends in remote working and staycations are potentially increasing tourism demand in peripheral regions (Fotiadis et al., 2021). These trends, coupled with pre-pandemic shifts towards individualised and authentic tourism experiences, create new possibilities for peripheral regions to leverage their unique assets (Salvatore et al., 2018). This changing landscape suggests the need to re-examine PSO implementation to foster commercially sustainable connectivity and tourism development.

To address these gaps and opportunities, this study investigates how PSOs can best support tourism-focused, place-based development in peripheral regions and identifies

necessary modifications to optimise their implementation. The following research questions guide this investigation:

1. What conditions could positively influence demand for air routes to peripheral regions?
2. How effectively do PSOs support place-based and tourism development strategies in peripheral regions?
3. What changes in the PSO scheme could support regional economic and tourism development while reducing subsidies?

The study uses an exploratory multiple-case methodology focusing on three peripheral UK airports—City of Derry, Cornwall Newquay, and Dundee to address these questions. These regions were selected based on their economic characteristics, primarily their lower-than-average business density and economic activity rates, as well as their distinctive geographical contexts and tourism development potential. It combines in-depth stakeholder interviews with supplementary survey data to provide a comprehensive analysis of PSO implementation and its impact on regional development.

2. Regional development, tourism and air connectivity

New Economic Geography highlights how economic activity tends to concentrate in core regions, marginalising peripheral areas due to factors like economies of scale and agglomeration benefits (Krugman, 1991). This concentration creates self-reinforcing cycles of economic divergence, where peripheral regions become locked into inefficient development patterns. Breaking free from this path dependence requires targeted interventions through place-based development strategies that leverage unique local assets to promote economic convergence (Rodrigues-Pose & Fitjar, 2013). These strategies encourage regional specialisation and entrepreneurship to capitalise on local strengths (Ward & Brown, 2009).

The trend towards niche tourism experiences presents a significant opportunity for peripheral regions implementing place-based development strategies. With unique landscapes, culture, and heritage, these regions are well-positioned to cater to a growing demand for individualised, immersive, and authentic experiences (Salvatore et al., 2018). In fact, tourism offers economic benefits that extend beyond direct visitor spending and include job opportunities for unskilled and semi-skilled workers (Dwyer et al., 2000), growth of local tourism SMEs, and industry cluster expansion through increased competition (Stabler et al., 2010). Moreover, tourism stimulates investment in new products, infrastructure, and preservation efforts, which also benefit residents' quality of life (Schubert et al., 2011). However, peripheral regions face significant barriers that hinder tourism development. International visitors often remain near gateway hubs due to time and cost constraints (Khadaroo & Seetanah, 2007), while short-break tourists seek maximum value within strict budgets and schedules (Visit England, 2014). These factors, coupled with the geographic isolation and lower accessibility of peripheral regions, restrict tourism's potential as an economic development engine (Limao & Venables, 2001). Air connectivity can address such

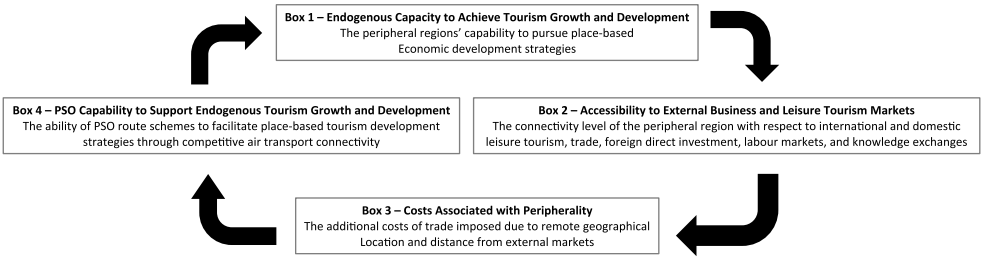

Figure 1. Conceptual setting.
Source: authors' elaboration.

challenges by offering affordable, convenient, and reliable connections to peripheral regions It unlocks globalisation opportunities previously stifled by peripherality (Laird & Mackie, 2014) and promotes benefits like trade, foreign direct investment, innovation, and tourism expansion (Banno & Redondi, 2014; Brathen & Halpern, 2012). Tourism particularly relies on aviation, which served 58% of international visitors in 2018 (ATAG, 2020), making it essential for expanding tourism opportunities by linking generating regions to peripheral destinations.

The previous points highlight the critical role of transportation infrastructure and robust air links in stimulating tourism growth and broader economic development in peripheral regions. Figure 1 conceptually captures the key factors shaping the relationship between air connectivity and place-based regional tourism development. This framework emphasises the interconnectedness of elements crucial for successful place-based development strategies (Box 1). Improved access to domestic and international visitor markets (Box 2) is very important. The framework acknowledges the challenges faced by peripheral regions, including high transportation costs and limited connectivity, which exacerbate their geographic disadvantages (Box 3). Critically, it highlights that high-quality, reliable air connectivity (Box 4) plays a key role in mitigating these challenges and unlocking sustainable tourism opportunities, thereby offering a pathway for regional development.

3. Methodology

This study employed an exploratory embedded multiple-case methodology, using three peripheral UK airports—City of Derry (LDY), Cornwall Newquay (NQY), and Dundee (DND)—as the cases. These airports were selected for two main reasons: first, the regions' economic challenges, including lower business density and economic activity (details in Appendix Four); second, their unique geographical contexts, such as remoteness from major cities, distinctive landscapes, and cultural heritage. The case regions were defined as the airport catchment areas of airports with London-based PSOs and central government support, reflecting London's economic and international gateway role. This geographical framing was very important for analysing how PSOs can be tailored to support place-based tourism development. Other regions were excluded for reasons such as reliance on connections to London or a focus on regional social services. The case studies were confined to the UK for consistency in policy, economic, and market

conditions, with language and accessibility considerations also in mind. Despite Brexit, the UK still operates PSOs based on EU principles.

Data was collected through stakeholder interviews and a supplemental survey. The research aimed to assess the effectiveness of PSOs in supporting place-based tourism development in peripheral regions, identify improvements for PSO implementation, and explore factors influencing PSO demand.

4. Research design and data collection

4.1. Stage 1: semi-structured interviews

Semi-structured interviews were conducted with key stakeholders involved in economic development, transport connectivity, or air services. Participants were selected through judgmental sampling, focusing on sectors relevant to place-based development. Three stakeholder groups were identified: local authority managers with economic development or transport roles, local business representatives (including owners and industry association members), and senior employees of air service providers. The interview guide (Appendix One) was developed around the conceptual framework of Figure 1. Forty-four (44) stakeholders were approached, and thirty-five (35) interviews were conducted and transcribed using NVivo software, allowing for flexibility to explore emerging themes while aligning with the study's key research areas.

4.2. Stage 2: survey

Key technical themes identified in Stage 1 interviews informed the design of a structured questionnaire for Stage 2, which asked participants to evaluate the importance and performance of these themes (Appendix Three). The survey aimed to validate the technical themes and assess their significance for successful PSO implementation, as well as stakeholder satisfaction with current PSO performance. Using an 11-statement format with a 5-point Likert scale, participants rated both the importance of each attribute and their satisfaction with its implementation. The survey was distributed to all 44 stakeholders initially selected for interviews (35 interviewed and 9 additional stakeholders who had scheduling conflicts). Thirty-six (36) participants responded, yielding an 82% response rate. The same stakeholders who participated in the interviews were surveyed to validate and quantify the key technical themes, benefiting from their expertise in PSO operations and regional development. This approach enabled triangulation of qualitative and quantitative findings, ensuring consistency in expertise and regional representation within the sample.

Responses were analysed using Importance/Performance Analysis (IPA), a widely used technique in transportation research (Esmailpour et al., 2020). As shown in Figure 2, IPA involves plotting importance and performance ratings on a two-dimensional graph, with quadrants defined by scale-centred crosshairs. A 45-degree iso-rating line indicates where importance exceeds performance, highlighting areas that require improvement. Attributes falling below this line are considered sustainable, while those above it suggest a need for optimisation and are prioritised based on their quadrant location.

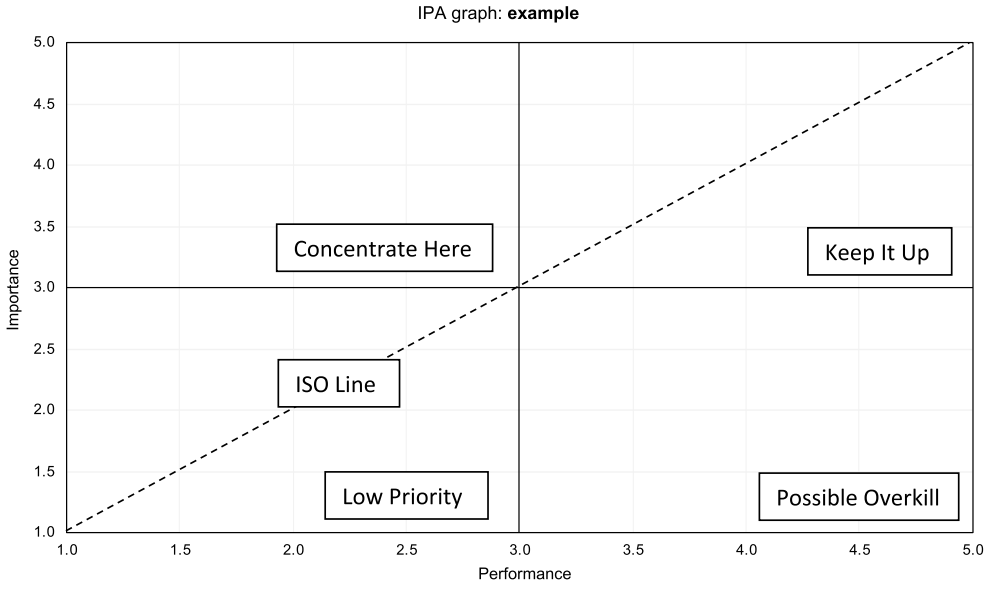

Figure 2. Importance—performance framework.

4.3. Case study context

There is a divergence in key economic metrics between the case study regions and the UK average, including lower economic activity, business density, enterprise, average wages, and household incomes (Appendix Four). As a result, boosting employment levels and quality is a primary regional development goal. Each region capitalises on its existing strengths by growing specialised, knowledge-based industries and high-value tourism, and has secured government "Deal" funding (Table 1).

All regions have identified tourism exports as an economic driver and aim to attract high-value, longer-stay visitors rather than large volumes of low-spending day-trippers. With abundant high-quality assets like unique local culture, heritage sites, and historic and natural environments, they are packaging and promoting their strengths to appeal to international and short-break tourists (Table 2).

Table 1. Key economic sectors in the three airport regions.

LDY	NQY	DND
Artificial intelligence	Creative	Food & drink
Cognitive analytics	Space	High value engineering & manufacturing
Personalised medicine	Energy	
Virtual & augmented reality	Agri-food	Energy: renewable, offshore wind, oil decommissioning
Robotics	Marine	
Advanced manufacturing	Mining Systems	Digital & Creative
Hybrid learning	Aerospace	Biomedical, life &, MedTech
Health & life sciences	eHealth	Construction
Culture & tourism	Tourism	Tourism & Culture

Note: Airport codes – LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland.
Source: DCSD council (2019); CIOS LEP (2018); Tay Cities (2019).

Table 2. Tourism opportunities in the three airport regions.

LDY	NQY	DND
A Hub for Exploring.	Exciting & Diverse Natural Appeal	Food Culturalists
Where the Wild Atlantic Way & Causeway Coastal Route Meet	Long Coastline & Wild, Iconic Moors.	Curious Travellers Outdoor Adventurers
The Historic Walled City		UNESCO City of Design
History & Heritage	Vibrant Culture	Tay River Waterfront Development
Creativity & Culture	World Heritage Sites & Renowned Attractions.	
Activity & Adventure	Eden Project & Tate St Ives	V&A Museum

Note: Airport codes – LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland.
Source: DCSD council (2019); CIOS LEP (2018); Tay Cities Region (2019).

Isolation presents significant accessibility challenges for all three regions. Derry relies entirely on the PSO route for direct connections, as ground transport options are lengthy, unreliable, and prone to disruption. Cornwall faces similar issues, with domestic tourists deterred by the 4 + hour road or rail journey. Dundee, too, depends on air transport, as the 6 + hour ground journey is unattractive to short-break visitors. Weather-related disruptions further exacerbate these challenges, underscoring the critical role of PSOs in connecting peripheral regions and supporting their tourism development.

5. Findings

5.1. Stage one: stakeholder interviews

Thirty-five interviews were conducted across the three peripheral regions to explore stakeholder perspectives on PSOs. The sample size varied slightly by region, with some underrepresentation in sectors like local tourism or aviation (Table 3). Framework Analysis was used to analyse the interview data (Ritchie & Spencer, 2002). This approach involves five key stages: familiarisation, identifying a conceptual framework, indexing, charting, and mapping/interpretation. This systematic approach organised key issues raised by interviewees into categorised groupings. Analysis revealed four overarching themes highlighting PSO-related deficiencies: cost, quality, convenience, and tourism development impacts. Within these themes, specific policy and technical concerns were identified, leading to the development of a framework summarising key areas for improvement.

The interviewees emphasised the PSO's role in challenging misperceptions of peripheral regions as poorly connected. Improved connectivity has contributed to a more positive narrative of business attractiveness and growth. Stakeholders expressed concern about the negative impact of losing the PSO route, as it would undermine the message of a region "*on the rise*" (Interviewee 19). Consistent air access, particularly through direct London routes enabled by PSOs, can shift perceptions from a region seeking help to a destination with strong investment potential. Ultimately, these air linkages shape the broader strategic vision by influencing external views on the region's economic vitality.

Business stakeholders view air connectivity as an essential utility, though unlike other services that are actively promoted, flights are assumed to be "*cost-prohibitive*" (Interviewee 7). Targeted marketing could help address this misperception, but airline revenue management practices remain a barrier. Cheaper fares often require bookings well in

Table 3. Profile of interviewees.

	Stakeholder group	Region	Sector	Comment
1	Business community	LDY	ICT, creative, or another knowledge	CTO
2	Business community	LDY	ICT, creative, or another knowledge	CEO
3	Business community	NQY	Innovative goods or manu-services	Owner (Partner)
4	Local authority	LDY	Tourism, leisure, or hospitality	MD
5	Business community	Cornwall	Innovative goods or manu-services	Owner
6	Local authority	DND		Councillor
7	Local authority	NQY		Director
8	Business community	NQY	Association	CEO
9	Business community	LDY	ICT, creative, or another knowledge	CEO & Owner
10	Business community	LDY	ICT, creative, or another knowledge	CEO & Owner
11	Business community	DND	ICT, creative, or another knowledge	CEO & Owner
12	Business community	LDY	ICT, creative, or another knowledge	CEO & Owner
13	Local authority	DND	Tourism, leisure, or hospitality	Director
14	Business community	DND	Tourism, leisure, or hospitality	COO
15	Business community	DND	Association	CEO
16	Aviation service provider			Chairman
17	Local authority	DND		Director
18	Local authority	NQY		CEO
19	Local authority	LDY		Director
20	Business community	LDY	Association	Director
21	Local authority	DND		HOD
22	Local authority	LDY		Councillor
23	Business community	NQY	ICT, creative, or another knowledge	Partner
*24	Aviation service provider			Director
25	Local authority	LDY		HOD
26	Business community	DND	Innovative goods or manu-services	Owner
27	Business community	LDY	Innovative goods or manu-services	Owner
28	Business community	NQY	ICT, creative, or another knowledge	Founding director
29	Business community	DND	Innovative goods or manu-services	Director
30	Local authority	DND	Tourism, leisure, or hospitality	HOD
31	Local authority	DND		Director
32	Business community	NQY	Tourism, leisure, or hospitality	Owner
33	Aviation service provider	LDY		Contractor/ consultant
34	Aviation service provider	DND		Contractor/ consultant
35	Local authority	NQY		Director

Note: Airport codes – LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland.

advance, hindering last-minute business trips (Interviewee 22). During peak times, rapidly rising fares are seen as airlines taking advantage of limited options.

The PSO's restricted network reach and destinations create a critical service gap. Interviewees highlighted the desire for a Heathrow route, described as the "*holy grail*" due to its extensive global connections (Interviewee 2). The loss of access to hubs like Schiphol further limits connectivity. "*I'd rather fly into Heathrow, and then Heathrow pretty much flies to every single country in the world, almost*" (Interviewee 2). Alternative routes often involve lengthy ground journeys, which are a significant deterrent for travellers (Interviewee 19).

Limited flight frequency, particularly the lack of midday rotations, adds to the inconvenience. The twice-daily service is "*not convenient for those not doing a standard business day*" (Interviewee 15). Participants also expressed dissatisfaction with the quality of turboprop aircraft on PSO routes. "*It's not so much the flights taking time; it's the rigmarole around it*" (Interviewee 32). These planes are associated with delays, slower flights, cramped cabins hindering productivity, and excessively long boarding processes.

Using alternative airports leads to substantial additional costs. "If you add up all the airport parking, the Gatwick Express, the this, that, and the other, you can add about 70,

80 quid onto the cost of the whole journey. Which is a bit frustrating, but it really racks up the cost" (Interviewee 30). Some resort to inconvenient options like early-morning buses to distant airports. Taking a 3:00 am bus "from Derry to Belfast to get on a 6:15 flight to get into London at eight o'clock in the morning. You will get it much cheaper than if you just go on the seven o'clock flight from Derry to London … " (Interviewee 22). However, such experiences are unsustainable: "Getting up at that time of the morning really takes it out of you, and there's only so much of it I would do" (Interviewee 22).

These constraints have disparate impacts on stakeholders, potentially hindering regional growth. Some stakeholders reluctantly limit travel for business growth (Interviewee 22). Others are forced to shift senior staff toward better-connected hubs, changing their operational models (Interviewee 12). Interviewees believe the lack of sufficient air connectivity between the regions and London deters potential investors and hinders regional development efforts. The logistical challenges of coordinating travel for executives within Northern Ireland, are an example: "*Some of the companies could be in Derry, but if they come in on a Belfast flight and you are taking them there, you are killing three hours with travel …"* (Interviewee 10). Easy access is vital for attracting investment, especially as executives prioritise time efficiency; current PSO service limitations are seen as barriers to engagement (Interviewee 9).

Logistical challenges due to PSO limitations extend to client interactions, discouraging regional site visits in favour of London venues. "*You don't have the ability to bring them into that premises, so that becomes your London office."* (Interviewee 12). This prevents businesses from showcasing their regional premises, potentially hindering relationship-building and growth. "*You would like to be able to use Derry as a shop window … , but because it's so complicated to get them there, you don't"* (Interviewee 12). Inconveniences at London airports are a further deterrent, with some clients avoiding visits entirely (Interviewee 30).

As for tourism, the interviewees recognise the vital role air connectivity plays in high-quality tourism growth. As stated, "The Cornish economy is heavily reliant on tourism. So having the ability of people to fly in is important to support the Cornish economy" (Interviewee 35). Expanding connectivity is key for attracting city breaks and international tourists (Interviewee 26). Barriers to seamless travel can dampen tourism volumes (Interviewee 23), especially when competing with other UK and international destinations. Furthermore, factors like aircraft size and airport transfers create additional friction for tourists. "Our key market is international markets as opposed to GB. It's a hop-on from London, but it's the getting back to London, the small plane, and the capacity". (Interviewee 30).

Interviewees involved in setting PSO criteria emphasise that the route's primary importance is "*primarily and purely around the business impact on us"* (Interviewee 12). Tourism stakeholders recognise this focus, viewing the PSO as primarily a business link with some potential for weekend leisure travel (Interviewee 24). Consequently, tourism agencies have not relied on the PSO for strategic development: "*From a tourism perspective, the city hasn't had the airport there to rely on"* (Interviewee 26). Beyond simply enabling travel, the nature of accessibility provided by the PSO is crucial for tourism. Route timings, connectivity with international flights, and service reliability heavily influence its potential for tourism development (Interviewees 8 and 26). Current limitations

hinder market growth, restricting the ability to build a consistent visitor base. "*It's a regularity and building up the market. We are missing out on that opportunity*" (Interviewee 8). While the PSO allows some leisure travel, better aligning provisions with visitor needs could fully unlock its tourism potential. Overall, regional stakeholders suggest that overlooking PSO routes for tourism development could be short-sighted. Enhancing accessibility with strategic modifications has the potential to transform PSOs into effective tourism drivers.

Stage 1 findings suggest that changes in policy and technical conditions are necessary to increase PSO demand. Strategically, it is crucial to recognise PSOs' role in place-based economic and tourism development, apply consistent justification criteria, and purposefully focus on stimulating demand. These criteria should prioritise the needs of international and domestic leisure tourists. On the technical side, ensuring convenient airport access, sufficient daily flight rotations at suitable times, connectivity to major hubs, reasonable fares, and higher-quality aircraft would significantly improve the PSO's proximity, frequency, convenience, affordability, and overall quality. Implementing these changes would make the PSO more appealing, attracting both businesses and tourists alike. A summary of the main results is presented in Appendix Two.

5.2. Stage two: stakeholder survey

The strategic and technical themes identified above refer to PSO attributes that are a product of policy decisions and influence the nature of service stakeholders' encounters. Of central importance are the service attributes that became the basis of the survey statements. These were presented to the participants in a way they would recognise (Appendix Three). The survey findings indicate a high level of agreement about the importance of the attributes and that the performance does not fulfil them satisfactorily. Participants' demographic information is presented in Appendix Five. Responses were grouped by All Responses, Case Study Region, and Stakeholder Group.

Figures 3 and 4 are heatmaps depicting the distribution of ratings for the attributes across Importance and then Performance. The colours represent Likert scale ratings, with blue and green indicating scores of 5 and 4, yellow indicating scores of 3, and orange and red indicating scores of 2 and 1. Comparison of the heatmaps illustrates a significantly higher proportion of blue and green responses for Importance (Figure 3), and orange and red responses for Performance (Figure 4). 91% of responses rate attribute importance above 3 on the Likert scale, with 54% giving a rating of 5. "Promotions" has the lowest importance rating, with only 58% of respondents rating it as important (Figure 3). 58% of attribute responses rate performance as 3 or below on the Likert scale (Figure 4). 49% fewer responses indicate performance above 3 compared to importance. "Promotions" scores lowest, with only 8% of respondents indicating satisfactory performance, while "Departure Airport" has the highest satisfaction at 75%. Other attributes' performance satisfaction ranges from 31% to 58%. Despite low performance ratings, stakeholders strongly agree on the attributes' importance. The lower satisfactory performance responses highlight a substantial gap between the importance of these attributes and how well the PSOs meet stakeholders' requirements.

The average importance rating is 4.42 (range: 3.55-5.00), indicating strong stakeholder agreement (Table 4). In contrast, the average performance rating is 3.17 (range: 1.55-4.36),

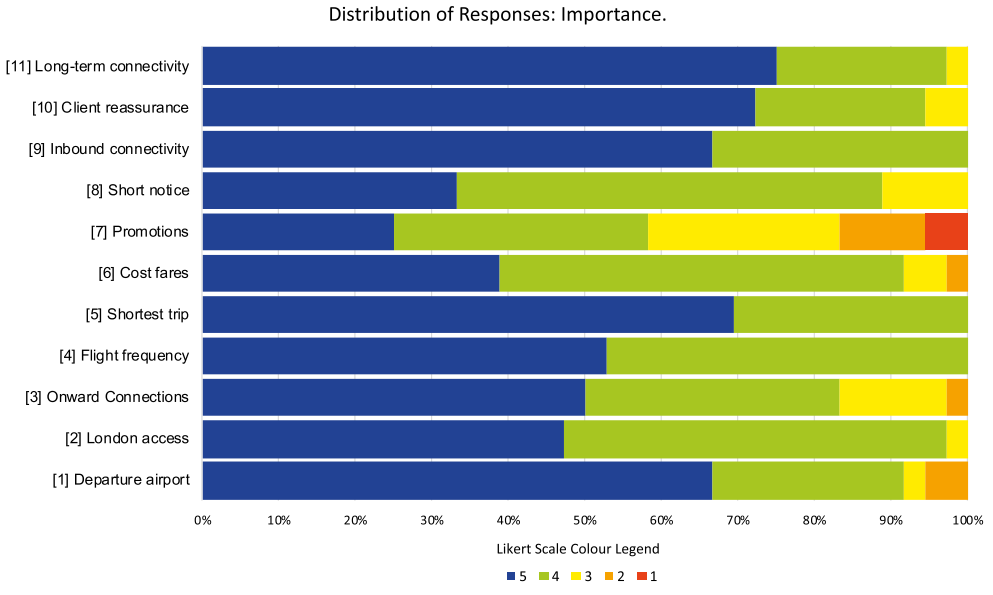

Figure 3. Importance response heatmap.

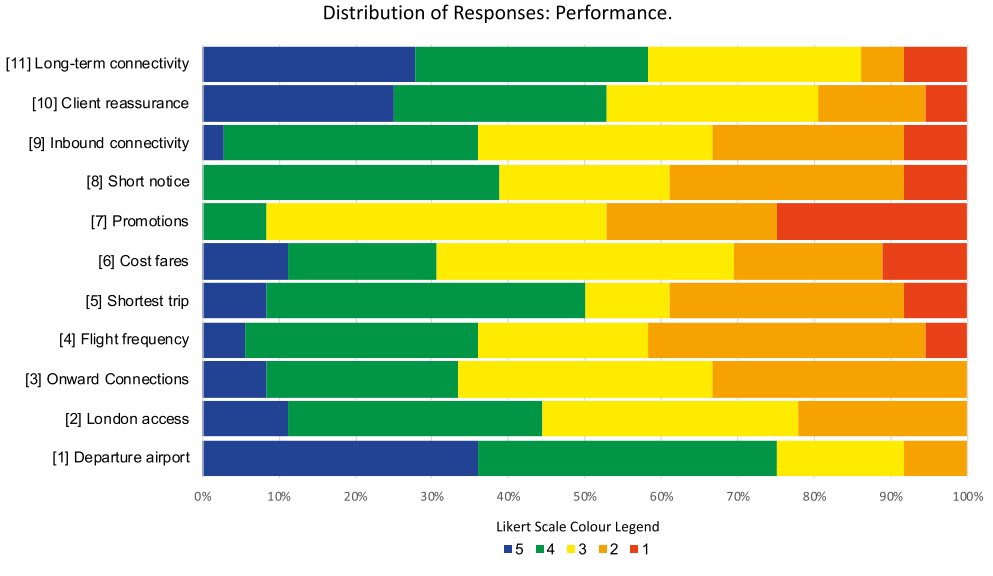

Figure 4. Performance response heatmap.

suggesting low satisfaction with the PSO. The average Performance—Importance Gap is −1.25, ranging from 0.09 to −2.91. This indicates the level of satisfaction with the performance of the PSO is below the importance attached to it. When grouped by region or stakeholder, importance means remain consistent (4.36-4.46), while performance means vary slightly (2.99-3.33), maintaining a similar gap between importance and performance.

Most attributes have Importance ratings above 4 (Table 5), ranging from 4.22–4.72, with "Promotions" as the sole exception at 3.61. Performance ratings are universally

Table 4. Range and standard deviation—all responses and various groups.

	IMPT.				PERF.				Gap		
Groups	Min	Max	Range	SD	Min	Max	Range	SD	Min	Max	Range
All Responses	3.55	5.00	1.45	0.36	1.55	4.36	2.82	0.74	−2.91	0.09	3.00
LDY	3.55	5.00	1.45	0.44	2.09	4.36	2.27	0.70	−2.91	0.09	3.00
NQY	3.91	5.00	1.09	0.31	2.00	4.36	2.36	0.67	−2.45	−0.18	2.27
DND	4.00	5.00	1.00	0.32	1.55	4.18	2.64	0.80	−2.91	−0.45	2.45
BC	3.55	5.00	1.45	0.35	1.55	4.36	2.82	0.61	−2.91	0.09	3.00
LA	3.73	5.00	1.27	0.39	2.36	4.18	1.82	0.79	−2.18	−0.27	1.91

Note: Airport codes – LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland; BC: Business Community; LA: Local Authority.

Table 5. Mean values for individual attributes—all responses and various groups.

Attribute	1	2	3	4	5	6	7	8	9	10	11
All Responses											
IMPT.	4.53	4.44	4.31	4.53	4.69	4.28	3.61	4.22	4.67	4.67	4.72
SD	0.80	0.55	0.81	0.50	0.46	0.69	1.14	0.63	0.47	0.58	0.51
PERF.	4.03	3.33	3.08	2.94	3.11	3.00	2.36	2.92	2.97	3.53	3.64
SD	0.93	0.94	0.95	1.05	1.17	1.13	0.95	1.01	1.01	1.17	1.18
Gap	−0.50	−1.11	−1.22	−1.58	−1.58	−1.28	−1.25	−1.31	−1.69	−1.14	−1.08
LDY											
IMPT.	4.50	4.42	3.75	4.50	4.83	4.17	3.67	4.25	4.75	4.50	4.58
SD	0.87	0.62	0.92	0.50	0.37	0.60	1.23	0.60	0.43	0.76	0.64
PERF.	4.17	3.33	3.00	3.33	3.33	3.33	2.17	3.00	3.08	3.83	4.08
SD	0.90	0.83	0.90	0.92	1.16	1.30	0.92	0.86	0.95	1.01	0.86
Gap	−0.33	−1.08	−0.75	−1.17	−1.50	−0.83	−1.50	−1.25	−1.67	−0.67	−0.50
NQY											
IMPT.	4.67	4.50	4.67	4.58	4.75	4.25	3.33	4.42	4.50	4.67	4.67
SD	0.47	0.49	0.47	0.49	0.43	0.90	1.09	0.49	0.50	0.47	0.47
PERF.	3.83	3.25	3.33	3.08	3.08	2.92	2.50	3.17	3.00	3.42	3.58
SD	0.90	1.11	1.04	0.90	1.14	1.08	0.76	0.92	0.80	1.04	1.30
Gap	−0.83	−1.25	−1.33	−1.50	−1.67	−1.33	−0.83	−1.25	−1.50	−1.25	−1.08
DND											
IMPT.	4.42	4.42	4.50	4.50	4.50	4.42	3.83	4.00	4.75	4.83	4.92
SD	0.95	0.49	0.65	0.50	0.50	0.49	0.99	0.71	0.43	0.37	0.28
PERF.	3.83	3.25	3.33	3.08	3.08	2.92	2.50	3.17	3.00	3.42	3.58
SD	0.95	0.86	0.76	1.11	1.19	0.92	1.11	1.11	1.21	1.37	1.23
Gap	−0.33	−1.00	−1.58	−2.08	−1.58	−1.67	−1.42	−1.42	−1.92	−1.50	−1.67
BC											
IMPT.	4.50	4.46	4.50	4.54	4.71	4.33	3.67	4.25	4.58	4.79	4.75
SD	0.77	0.58	0.65	0.51	0.46	0.75	1.22	0.61	0.50	0.41	0.52
PERF.	3.88	3.29	3.13	2.83	3.08	3.00	2.46	2.83	2.96	3.50	3.50
SD	1.01	0.97	1.00	1.08	1.27	1.31	0.92	1.08	0.95	1.26	1.33
Gap	−0.63	−1.17	−1.38	−1.71	−1.63	−1.33	−1.21	−1.42	−1.63	−1.29	−1.25
LA											
IMPT.	4.50	4.50	4.20	4.50	4.60	4.10	3.50	4.30	4.90	4.60	4.80
SD	1.01	0.53	0.83	0.53	0.53	0.60	1.13	0.67	0.33	0.73	0.44
PERF.	4.20	3.50	3.10	3.20	3.20	3.10	2.10	3.20	3.10	3.70	4.00
SD	0.67	1.00	0.97	1.12	1.00	0.71	0.87	0.87	1.30	1.05	0.87
Gap	−0.30	−1.00	−1.10	−1.30	−1.40	−1.00	−1.40	−1.10	−1.80	−0.90	−0.80

Note: Airport codes – LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland; BC: Business Community; LA: Local Authority.

below 4, spanning from 2.36–4.03, with "Departure Airport" being the only above-average performer. Four attributes ("Flight frequency", "Promotions", "Short notice", "Inbound connectivity") have Performance means below 3. Consequently, all attributes show

negative Importance/Performance gaps greater than 1, ranging from −1.08 to −1.69, except for "Departure Airport", which has a smaller gap of −0.5.

When grouped by region or stakeholder, there is no significant deviation from the pattern observed in the All-Responses group. The Importance means, Performance means, and Performance/Importance gaps show a similar trend across the different groupings. Indicating stakeholders perceive all attributes as highly important (Importance means > 4). However, there is a notable gap between the perceived importance and the satisfaction with the performance of the attributes (Performance means < 4). This gap is consistent across different groupings, suggesting a general dissatisfaction with the performance of the service attributes.

The analysis of means and standard deviations provided statistical support for the variance in stakeholder opinions. For the "All Groups" category, the Importance ratings range from 3.61–4.69, with standard deviations between 0.46 and 1.14, indicating strong agreement among stakeholders that these attributes are of high importance. In contrast, the Performance ratings show lower means, ranging from 2.36–4.03, and consistently higher standard deviations between 0.93 and 1.18. This variation in performance ratings reveals two key insights. First, PSO services are generally underperforming relative to their perceived importance, with all attributes showing negative Performance—Importance gaps, ranging from −1.08 to −1.69, except for "Departure Airport" (−0.5), which shows a smaller gap. Second, there is significant variability in stakeholder experiences of performance, indicating systemic issues in service delivery. For example, "Flight Frequency" has a mean performance rating of 2.36, showing a substantial gap in stakeholder satisfaction, while "Departure Airport" performs better with a mean of 4.03, but still with some variability in how stakeholders experience it. The wider discrepancies in performance across the attributes suggest that, even though some stakeholders report satisfactory experiences, there is less consistency in performance compared to the unified views on importance.

5.3. Importance/performance analysis

IPA was undertaken first for All Responses, revealing distinct patterns in stakeholder evaluations. The analysis identified key areas requiring attention, with five attributes falling into the "Concentrate Here" quadrant: "Flight Frequency", "Fares Cost", "Promotions", "Short Notice", and "Inbound Connectivity". These attributes are characterised by high importance but currently underperforming, making them priority areas for improvement. On the other hand, six attributes were positioned in the "Keep it Up" quadrant: "Departure Airport", "London Access", "Onwards Connections", "Shortest Trip", "Client Reassurance", and "Long-Term Connectivity", indicating that current performance in these areas meets better stakeholder expectations (Figure 5).

The regional analysis revealed some interesting variations. For "Onward Connections', both Derry and Dundee showed significant performance gaps, while Cornwall, benefiting from Heathrow service, performed marginally better. However, even Cornwall's performance barely exceeded satisfactory levels, which suggests that connectivity remains a universal challenge across all regions (Figure 6).

Regional variations emerged in the analysis of service frequency and costs. While Derry achieved "Keep it Up" status for both flight frequency and fare costs, Cornwall and

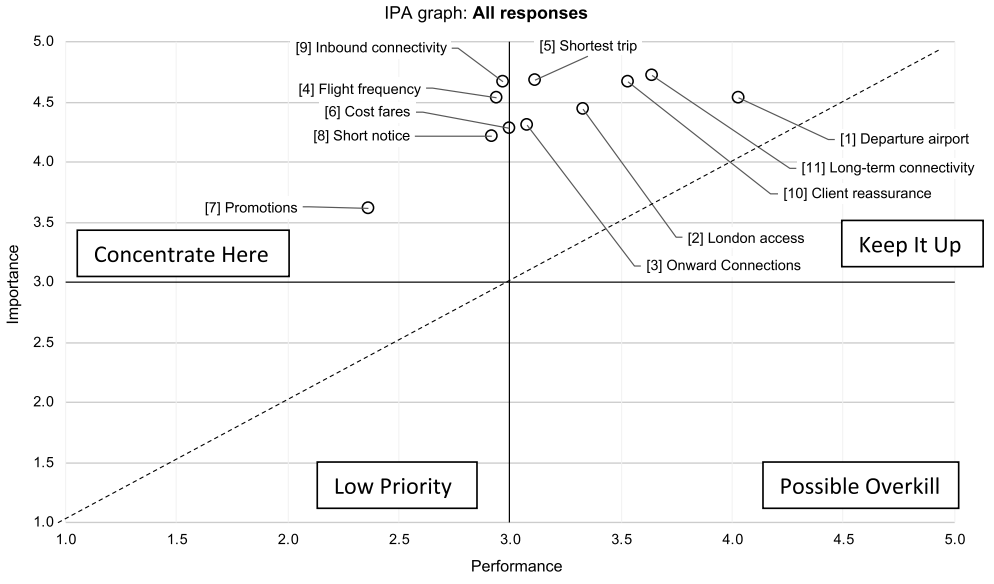

Figure 5. Importance/performance analysis (all responses).

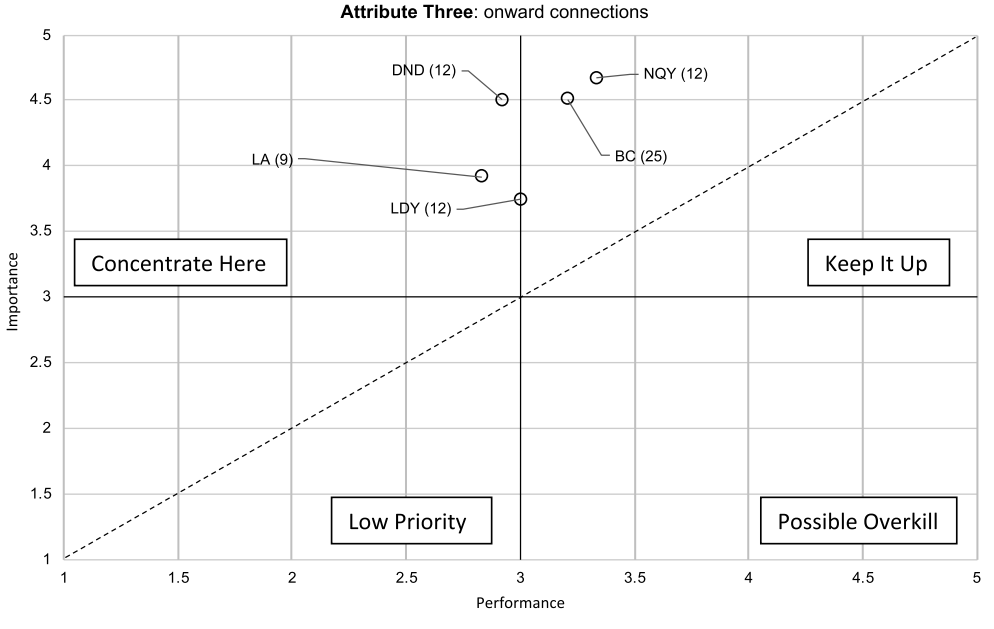

Figure 6. Importance/performance analysis: onward connections (regions and stakeholders).

Note: Airport codes-LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland; BC: Business Community; LA: Local Authority.

Dundee fell into the "Concentrate Here" category despite Cornwall operating more daily flights. This counterintuitive finding might be explained by Derry's unique geographical context—its passengers can access alternative airports in Belfast and Dublin with better connections. Cornwall stood out in short notice booking availability, being the

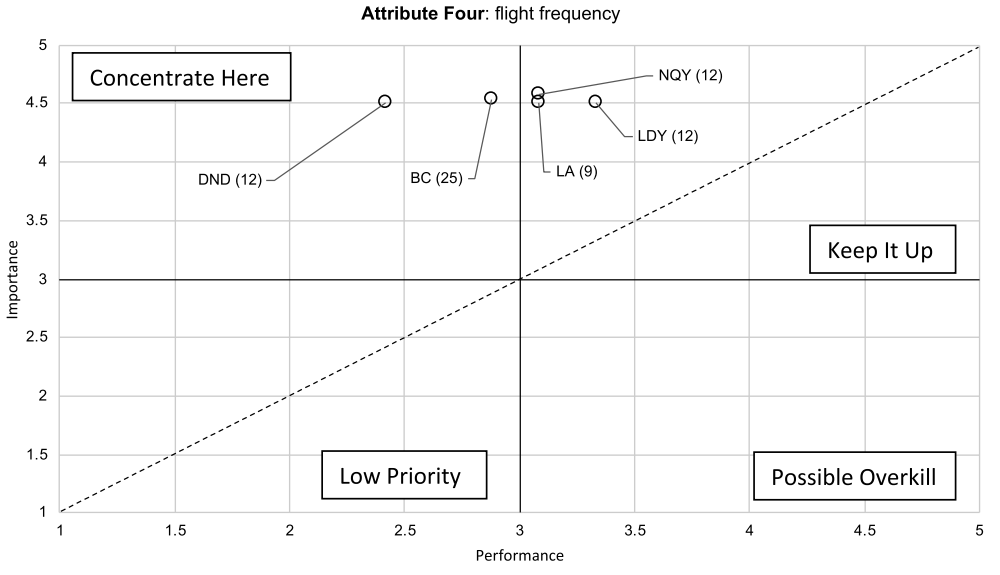

Figure 7. Importance/performance analysis: flight frequency (regions and stakeholders).

Note: Airport codes-LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland; BC: Business Community; LA: Local Authority.

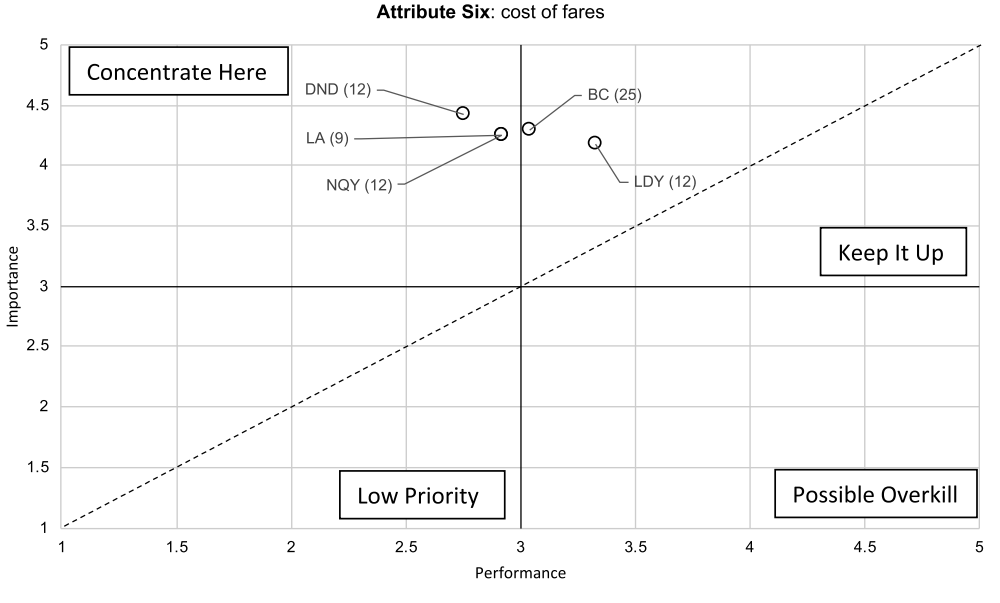

Figure 8. Importance/performance analysis: fare cost (regions and stakeholders).

Note: Airport codes-LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland; BC: Business Community; LA: Local Authority.

only region to achieve "Keep it Up" status, which aligns with its higher frequency of daily flights (Figures 7 and 8).

The "Shortest Trip" analysis revealed that both Derry and Cornwall achieved "Keep it Up" status, while Dundee fell below expectations. Derry's positive rating, despite fewer

rotations, likely reflects its geographical reality as the only viable air connection between Northern Ireland and London for its catchment area. However, even in this best-

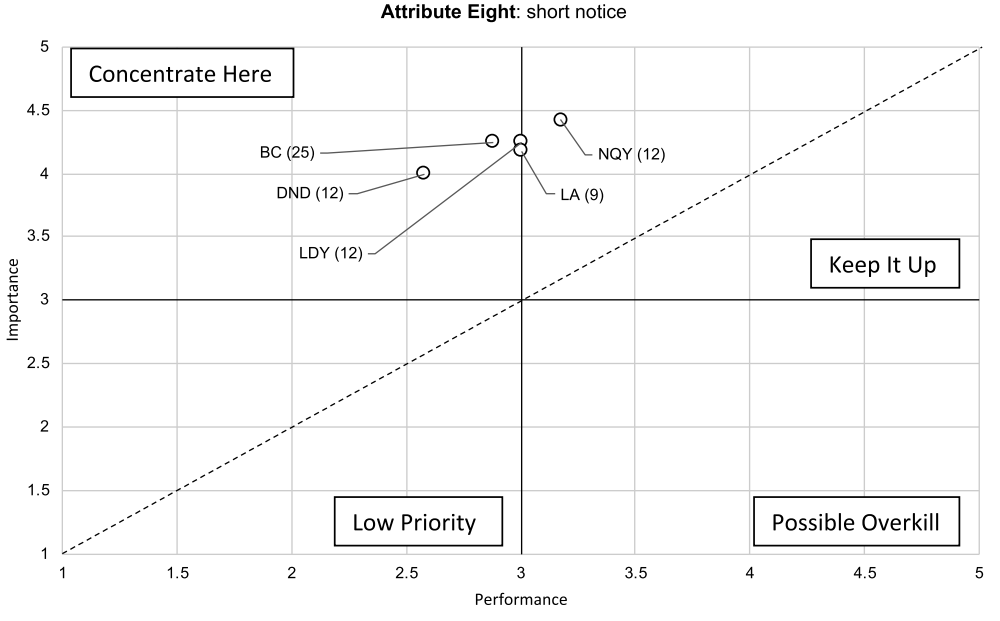

Figure 9. Importance/performance analysis: short notice (regions and stakeholders).

Note: Airport codes-LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland; BC: Business Community; LA: Local Authority.

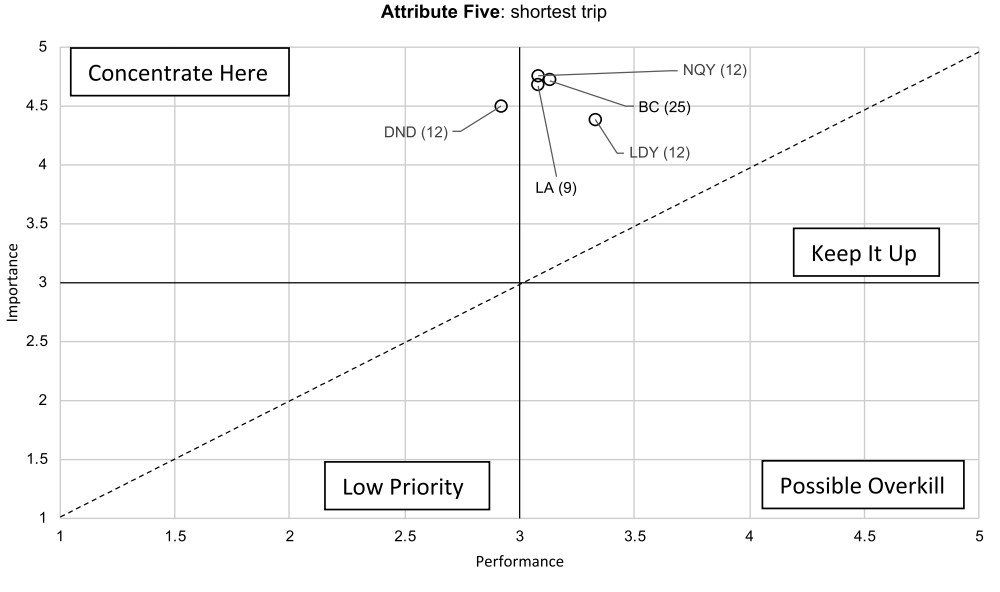

Figure 10. Importance/performance analysis: shortest trip (regions and stakeholders).

Note: Airport codes-LDY: City of Derry Airport, Northern Ireland; NQY: Cornwall Newquay Airport, England; DND: Dundee Airport, Scotland; BC: Business Community; LA: Local Authority.

performing category, ratings remained below optimal levels relative to importance (Figures 9 and 10).

These findings highlight consistent patterns: stakeholders across all regions place high importance on most service attributes, but current PSO performance generally falls short of these expectations. The largest gaps between importance and performance consistently appear in flight frequency, fare costs, and connectivity options, suggesting these should be priority areas for PSO service enhancement.

6. Discussion

This study's findings offer valuable insights into how PSO routes can be strategically leveraged to stimulate economic and tourism development in peripheral regions. They reveal the need to evolve PSO provisions beyond their current focus on minimal air connectivity in peripheral regions towards better serving contemporary business and visitor needs. PSOs can become catalysts for demand generation by enhancing network access, flight rotations, service quality, and affordability,, thus paving the way for commercial viability and reduced subsidies.

6.1. PSOs as essential service guarantors

The findings confirm PSOs' role in guaranteeing minimum air connectivity for peripheral regions that would otherwise lack viable commercial services. In Derry, Cornwall, and Dundee, PSOs provide essential connectivity through mandated routes, frequencies, and regulated fares with stakeholders heavily relying on these services for access to major economic centres, particularly London. Even when performance falls short of expectations (as shown in the IPA analysis), PSOs still fulfil their core function of preventing isolation with stakeholders viewing them as "an essential utility" for regional accessibility (ICAO, 2005, Laird & Mackie, 2014; Paraschi et al., 2022). However, the study suggests that while current PSO provisions maintain minimal connectivity, they could be better optimised to support broader regional development goals.

The significant gaps between service importance and performance indicate that the current subsidy levels may not be sufficient to ensure optimal service quality and frequency. The IPA analysis highlighted that fare costs and flight frequency fall into the "Concentrate Here" quadrant, suggesting that these financially-driven attributes need more attention and possibly increased investment. However, rather than simply advocating for greater subsidies, the findings advocate for an investment in service quality and marketing to stimulate demand in order to reduce long-term subsidy dependence. This is consistent with stakeholder views that PSOs should be viewed as catalytic investments in regional development and not simply as ongoing subsidies.

6.2. Conditions influencing PSO route demand

The stakeholder interviews highlighted key strategic policy conditions and operational enhancements necessary to boost demand for PSO routes from both business and leisure travellers—an area relatively under-explored in the existing literature. While prior studies have examined implementation challenges (Merkert & O'Fee, 2013), research

on optimising PSOs to stimulate demand is less developed. The findings underscore the need to view PSOs as investments in regional economic and tourism development rather than solely serving business users. This shift aligns with the study's conceptual framework, which highlights the central role of air connectivity in development strategies. It also reflects the views of Laird and Mackie (2018) and the International Civil Aviation Organisation (2005), who emphasise PSOs as a tool for economic stimulation and as initial catalysts for tourism economies respectively. However, as it notes, this strategic view must be paired with broader tourism development investments for long-term commercial sustainability.

Purposeful demand development is crucial. Contrary to suggestions in the literature that PSO routes rarely achieve commercial viability (Merkert & O'Fee, 2016), stakeholders emphasised the need for proactive marketing and airlines scaling capacity in response to demand. A partnership approach between authorities and airlines is key for generating the scale needed for eventual self-sustenance. This aligns with Papatheodorou and Koura (2012) who advocate for better market orientation and tailoring PSO services to demand. It also supports ICAO's (2005) call for a pragmatic, collaborative approach for sustainable PSO operation in the medium term.

The identified technical conditions of proximity, frequency, and quality support the conceptual framework's focus on the link between transport costs and accessibility, aligning with airport choice literature (CAA, 2015). The findings further highlight the spatial dynamics of knowledge-based economies, where peripheral amenities like quality of life play a key role in attracting businesses. This shift contrasts with the focus on scale economies in traditional production economies. Developing high-quality tourism assets (Schubert et al., 2011) enhances a region's overall appeal. However, the narrow focus of current PSO criteria on day-return business trips fails to address these evolving spatial needs of the knowledge economy. It also neglects the requirements of high-value international and domestic short-break tourists who are crucial for peripheral tourism economies, likely explaining tourism stakeholders' scepticism of PSOs as reliable development tools.

The findings highlight a gap in understanding the potential of PSOs in relation to broader geographic processes and the need to expand their strategic role to facilitate place-based objectives that encompass both trade and tourism development, recognising the importance of spatial connectivity for economic opportunities and quality of life factors. The survey results affirm this perspective—stakeholders place high importance on technical attributes identified in the interviews. Conditions like airport proximity, flight frequency, and expanded network access are seen as critical demand drivers, emphasising the conceptual framework's focus on how transport costs and accessibility shape spatial relationships and economic activities.

6.3. Economic and social impact of PSOs

The study highlights how PSOs generate broader economic and social benefits beyond basic connectivity. The stakeholder interviews revealed that reliable air access acts as a catalyst for regional development. In the tourism sector, PSO routes help regions tap into high-value international markets, as seen in Cornwall's Heathrow connectivity, which facilitates tourist dispersal beyond traditional gateway cities. Most business

stakeholders agreed that air connectivity supports knowledge-intensive sectors by enabling face-to-face client interactions and attracting skilled professionals. Social benefits, often overlooked in traditional PSO evaluations, were also significant. Stakeholders across all three regions noted how air access improves access to specialised medical services, higher education opportunities, and broader cultural experiences, with Derry's stakeholders particularly highlighting its importance for London connections. The IPA analysis reinforced the significance of attributes like "Long-Term Connectivity" and "Client Reassurance" for regional resilience and attractiveness.

The findings also highlight PSOs' role in promoting territorial cohesion (Paraschi et al., 2022), with each region facing distinct geographical challenges. For Derry, the PSO provides crucial cross-water connectivity between Northern Ireland and Great Britain. Cornwall's service helps counter the region's extreme southwestern location and extensive journey times to major economic centres. For Dundee, the PSO helps bridge the north-south divide in the UK. Consistent with other studies on peripheral regions, such as the Canary Islands archipelago, Melilla and Extremadura in Spain (Raya et al., 2020), these connections help people see these areas not just as remote places in the periphery, but as important components of the national economy.

However, the study reveals that current PSO provisions may not fully optimise these benefits. The gap between performance and importance scores for "Inbound Connectivity" and "Flight Frequency" indicates that service limitations hinder the potential for economic and social growth and confirms stakeholder concerns about the difficulty of developing consistent tourist markets and maintaining business relationships under current PSO arrangements. Even if PSOs make a significant contribution to territorial cohesion, true spatial equality requires more comprehensive service provisions that are better aligned with each region's specific geographic and socio-economic context.

6.4. Effectiveness in supporting place-based strategies

The study revealed limitations in how current PSOs support place-based development strategies in peripheral regions like Derry, Cornwall, and Dundee. These strategies focus on knowledge-intensive sectors and high-value tourism, both of which demand competitive extra-regional connectivity (Barca et al., 2012). There is no evidence that PSO provisions consider the needs of leisure tourists, likely due to a prioritisation of business travellers, potentially stemming from funding constraints. However, high-value international and short-break tourists have comparable cost and convenience requirements to business travellers (Khadaroo & Seetanah, 2007). Unlike business travellers with limited destination choice, tourists can opt for locations that best meet their needs (Papatheodorou & Lei, 2006).

Stakeholders noted inadequacies in network reach, flight frequency, and service quality. The narrow criteria and limited schedules restrict business activity and make attracting inward investment difficult. These limitations likely also deter international tourists seeking destinations beyond gateway cities, as well as short-break tourists who are equally sensitive to cost and inconvenience (Visit England, 2014). The absence of direct UK and convenient international connections further compounds these challenges. Criticisms extended to turboprop aircraft, considered slower and less comfortable than jets. While stakeholders currently resort to alternative airports, despite the costs, this is

unsustainable in the long term and could hinder peripheral growth and investment, including tourism development.

The IPA technique provided quantitative insights, revealing significant shortfalls in PSOs meeting stakeholder needs across key attributes. Large negative gaps between performance and importance scores highlight the priority for enhancing frequency, cost, connectivity, convenience, and quality. This underscores the need for a policy shift in PSO implementation, moving towards a partnership approach in contract management to address these discrepancies. Targeted efforts towards promotion, addressing challenges for short-notice travel, and optimising inbound connections are also crucial for better aligning PSOs with stakeholder expectations and regional development goals.

6.5. Proposed changes in the PSO scheme

Strategically, expanding PSO scope to include high-value international and short-break tourists aligns with place-based development models and knowledge sector priorities (Barca et al., 2012), as well as the case study regions' specific strategies. This focus on enhanced inbound travel would attract investment, contrasting with the current outbound travel emphasis (Brathen, 2011). Adopting criteria that reflect these broader needs would better address stakeholder requirements and fill gaps identified in the literature (Fotiadis et al., 2021).

Technically, enhancements to flight frequency, cost, connectivity, and quality are necessary to align PSO services with modern economic demands. Increased rotations with flexible timings would benefit business travel (EU, 2017). Predictable fares would improve planning and affordability, which are crucial for leisure tourists. Direct flights to central, well-connected airports would maximise network access, addressing the shortcomings of current limited destinations and unfavourable airports (Lian, 2010). Finally, higher-quality aircraft would minimise delays and improve passenger experience, in contrast to the turboprop issues highlighted in the findings (Barrett, 2000). The proposed changes to the implementation of the PSO scheme become particularly relevant given the post-COVID fiscal constraints outlined in Section 1. With a focus on demand stimulation and commercial viability, these changes could help reduce long-term subsidy dependence (Lian, 2010; Reynolds-Feighan, 1996) and maximise the opportunities presented by emerging tourism and work patterns.

7. Conclusion

This study aimed to explore the potential of Public Service Obligations (PSOs) as tools to enhance economic and tourism development in peripheral regions. Through an analysis of three UK airports—City of Derry, Cornwall Newquay, and Dundee—the research examined how PSOs can better support place-based tourism strategies, identified gaps in the current provisions, and proposed modifications to improve their effectiveness.

The first research question sought to identify conditions that could positively influence demand for air routes to peripheral regions. The study found that PSOs should be viewed not only as subsidised air services but as strategic investments in regional development. Enhancing flight frequency, network access, and service quality can drive demand, making routes more commercially viable and ultimately reducing subsidy dependence. The second research question addressed the effectiveness of PSOs in supporting place-

based tourism and economic development strategies. Although PSOs provide essential connectivity, they do not fully meet the needs of both business and tourism sectors. Expanding service offerings, particularly in terms of route destinations, frequency, and quality, is necessary to better align with regional development goals. The study also underscored the broader social benefits of PSOs, such as improved access to medical services, education, and cultural experiences, which contribute to regional resilience and quality of life. The third research question explored potential modifications to PSOs that could enhance their impact on regional development. The findings suggest that PSOs could be expanded to accommodate both business and tourism needs, with improvements in flight frequency, affordability, and connectivity to major hubs. These modifications would not only make PSOs more attractive to businesses and tourists but also help in achieving long-term commercial sustainability for the routes, reducing reliance on subsidies.

This study used IPA as an analytical tool, however, certain methodological limitations should be acknowledged. One critique is the placement of crosshairs on the IPA graph, which can be scale-centred (3.0) or data-centred (grand means), with each approach affecting the interpretation of results and potentially influencing resource allocation (Lai & Hitchcock, 2015; Oh, 2001). Another limitation is that IPA relies on stated importance, which may not always align with revealed importance based on actual behaviour, leading to misaligned priorities (Deng & Pierskalla, 2018). Furthermore, IPA assumes a linear and symmetric relationship between attribute performance and overall satisfaction, which may not hold true in all cases (Deng & Pierskalla, 2018). These limitations suggest that the findings should be interpreted as indicative rather than definitive, providing helpful but not exhaustive guidance for PSO service improvements. Future research could address these issues by incorporating behavioural data and exploring alternative analytical approaches alongside IPA to offer a more robust evaluation of PSO effectiveness.

It should also be noted that this study relied on stakeholder interviews and surveys within three UK peripheral regions a feature that introduces potential subjectivity and limits generalisability. Future research could involve larger, more diverse samples, explicitly exploring the needs of high-value tourists and conducting comparative studies across various geographic contexts. Particularly valuable will be research examining how different regulatory frameworks and policy approaches affect PSO effectiveness in promoting regional equity and economic integration. Another line of inquiry could be the investigation of alternative financing models and the quantification of the economic impact of PSOs which could aid policy decision-making. This could include developing new metrics that capture both economic and social equity outcomes, helping policymakers better evaluate PSO contributions to territorial cohesion. Finally, research on how PSOs can be adapted to accommodate emerging social trends like remote work and digital nomadism would enhance their relevance and impact on peripheral regions.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendices

Appendix 1. Interview guide progression

Conceptual framework	Purpose of the question	Interview guide questions
(*Box* 1) Organisational capacity to achieve endogenous growth	To understand how and to what extent do local stakeholders believe a region's ability to deliver endogenous growth is affected by location, transport connectivity and business conditions.	What are the reasons for remaining located/ relocating in [region] or have you had reason to consider relocating What challenges or issues does your business face from being located in [region]? What is the geographical market for your [product/service]? Do you have ambitions further afield than [region]?
	The measures that must be taken to remove barriers to market access and productivity improvements.	Does [region] have an effective strategy and adequate resources to assist your business overcome these challenges [described] or to achieve your ambitions? What challenges does your business face that are created by the local business environment? What further support does your business need from the local authorities to achieve greater levels of growth?
(*Box* 4) PSO capability to support place-based development	How a deficit in the required PSO service quality effects: transport mode choices business performance and ambitions	Is air transport connectivity to London important to your business and for what reasons? How fully does the PSO service from [region] to London overcome the challenges described or satisfy the needs of your business? How would your business strategy be different had the air transport PSO service to London not been introduced?
	Changes necessary to the PSO provision to positively influence the use of aviation. Changes necessary in attitude towards PSOs to positively influence the marketisation of the route.	How would your business be impacted if the current air transport PSO service to London was discontinued? How should the Council and the business community respond if the PSO subsidy was not renewed and the air transport service to London was put at risk? What changes to PSO service would need to occur to have a positive transformative effect on your business?

Appendix 2. Proposed technical and policy modifications to positively influence PSO demand

Area	Condition	Objective
TECHNICAL	Closest proximity peripheral airport	• Minimise the time and financial cost of airport access • Reduce anxiety and complexity of travel arrangements • Eliminate the risk of disruption to additional journey legs
	Sufficient daily rotations	• Enable dovetailing of travel arrangements with arrangements for the primary trip purpose • Maximise trip productivity by reducing the redundant time spent in a destination • Eliminate the necessity to curtail the primary purpose of a trip to accommodate subpar travel arrangements

(*Continued*)

Continued.

Area	Condition	Objective
	Convenient core airport	• Minimise incremental time and financial cost of destination access • Reduce anxiety and complexity of travel arrangements • Reduce the risk of being stranded in the destination through travel disruption
	Connected core airport	• Provide convenient onward access to current and future market destinations • Provide convenient connections for inbound passengers • Minimise incremental costs and disruption risk from access to onward or inbound connections
	Modified fare strategies	• Reflect the essential nature of a PSO service in the absence of comparable travel alternatives • Avoid restricting affordability to the wealthiest firms and passengers, or to critical travel only
POLICY	Strategic role recognition	• Impose PSOs as an integral part of place-based development strategies, in regions where peripherality is compounded by inadequate transport connections with core centres and hub airports • Align the commitment to a PSO with the long-term horizons of development strategies • Assess the business case for a PSO according to the strategic potential and long-term objectives
	Consistent justification criteria	• Ensure the provision of a needs-based service • Presumption of achieving transport connectivity quality with non-peripheral and competitor regions • Equitable allocation of the cost of funding support
	Recognition of important non-connectivity benefits	• Enhance the reputation of the region as a business destination • Provide reassurance to firms, workers, and investors about the regions long-term connectivity • Align the commitment to a PSO with the long-term horizons of a region's development strategies
	Satisfy the needs of all passenger groups	• Services that fulfil the needs of all groups are crucial to delivering the regions' development strategy. Including: – Inbound and outbound passengers – Current and latent users – Business and tourism passengers – Young people
	Purposeful route demand development	– Long-term and partnership approach to route development – Incentives airlines to outperform contract SLAs, locking in passenger number baseline increase at contract renewal – PSO criteria and tender process that enhance the commercial appeal of PSO routes and harnesses the entrepreneurial instincts of commercial airlines

Appendix 3. Questionnaire statements

	Attributes
1	The flight departs from the airport that takes the shortest time to travel to.
2	The flight arrives at an airport most convenient for London.
3	The flight arrives at an airport most convenient for catching onward flights.
4	The frequency of flights can fulfil most air travel needs.
5	The flight departure and return times make it simple to minimise the time spent on a trip.
6	The cost of fares does not restrict air travel to only the most critical trips.
7	Passengers are made aware of ticket deals and fare promotions.
8	Suitable flights will be available for trips planned at short notice.
9	The service makes travelling to this region as convenient as it would be to any other region.
10	The PSO service reassure clients, investors, or partners, that location does not negatively affect capabilities.
11	The PSO service provides confidence in the long-term future of air services to and from this region.

Appendix 4. Key economic metrics

	LDY	NQY	DND	UK
GVA per head, 2019	19,879	19,871	21,551	29,909
GDP per head, 2019	23,099	23,060	27,295	33,510
Unemployment rate	4.3%	2.7%	4.1%	2.6%
Economically inactive	34% (2018)	21%	24%	21%
NVQ4 and above	34%	36%	54%	44%
No Formal Qualification	18%	6%	7%	6%
Weekly Pay gross	£388.7	£493.9	£575.4	£586.5
GDHI per head	£15,470	£19,180	£16,686	£21,440

	LDY	LDY Diff to UK	NQY	NQY Diff to UK	DND	DND DIFF to UK	UK
Micro	3,084	(557)	3,763	122	1,861	(1,780)	3,641
Small & Medium	370	(43)	483	70	354	(59)	413
Large	7	(9)	12	(3)	13	(2)	16
Total	**3,460**	**(609)**	**4,258**	**189**	**2,228**	**(1,841)**	**4,070**
Agriculture	836	612	747	523	13	(210)	224
Manufacturing	241	12	263	36	131	(96)	228
Construction	555	41	607	92	290	(225)	515
Services: Other	1,365	(261)	1735	110	1,177	(449)	1,626
Services: Knowledge	463	(1,015)	906	(572)	617	(861)	1,478
Total	**3,460**	**(609)**	**4,258**	**189**	**2,228**	**(1,841)**	**4,070**

Appendix 5. Survey participant's demographic information

	Count	Percent (%)
All responses		
Regions		
LDY	12	33.3
NQY	12	33.3
DND	12	33.3
	35	100
Stakeholder Group (SHG)		
Aviation Service Provider (SP)	2	5.6
Business Community (BC)	25	69.4
Local Authority (LA)	9	25.0
	36	100

Appendix 6. Acronyms

PSO	Public Service Obligation
ICAO	International Civil Aviation Authority
LCC	Low-Cost Carrier
LDY	City of Derry Airport
NQY	Cornwall Newquay Airport
DND	Dundee Airport
ICT	Information Communication Technology
IMPT	Importance
PERF	Performance
BC	Business Community
LA	Local Authority
GVA	Gross Value Add
GDP	Gross Domestic Product
GDHI	Gross Domestic Household Income
R&D	Research and Development
FTE	Full Time Equivalent
SME	Small Medium-sized Enterprise