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Tourism market share reconfiguration in KAZA TFCA: Interdependence indexes and CITS evidence from Botswana

Dandy Badimo and Dimpho Malebogo Matlhola

Okavango Research Institute, University of Botswana, Maun, Botswana

ABSTRACT

Transfrontier Conservation Areas (TFCAs) aim to promote sustainable conservation and economic integration across national borders. In Southern Africa, these transboundary areas are seen as engines of conservation-led development, but the impact on regional tourism markets remains unclear. This study examines the Kavango Zambezi (KAZA) TFCA's impacts on intra-regional tourism, with a focus on Botswana. Using interdependence and market integration theories, relevant indicators, and Controlled Interrupted Time Series models, results show modest changes post-KAZA. However, interdependence remains asymmetric, with tourist flows mainly in Botswana due to differences in product quality, conservation, and marketing, resulting in the siphon effect and skewed dependence. This suggests that the KAZA TFCA has not yet demonstrated clear evidence of integrated tourism markets or sustained cross-border tourism circuits, as indicated by observed flow patterns and indicators of independence. However, KAZA has implemented UniVisa and collaborative policies that promote equitable benefits. Botswana should leverage its cooperative advantage to promote KAZA's cooperative branding.

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Market integration; transfrontier conservation areas; interdependence index; tourism market share; UniVisa; reconfiguration

1. Introduction

Transfrontier Conservation Areas (TFCAs) emerged as a strategic response to rigid political borders often contradicting ecological processes and human mobility (Ron, 2007; Noe, 2010), a dynamic proving that this ecological–political tension continues to shape TFCA governance and mobility patterns (Linell et al., 2019; Blanken et al., 2022). This prompted a reconceptualisation of borders from impermeable barriers into potential areas for coordinated governance and cross-border cooperation (Noe, 2010; Timothy et al., 2016; Ozguc & Little, 2023; Steiner & Schröder, 2024). Ron (2007:10) defines TFCAs as 'areas or components of a large ecological region that straddle the boundaries of two or more countries, encompassing one or more protected areas, as well as multiple resource-use areas'. TFCAs were intended to mitigate the spatial fragmentation of ecosystems and tourism markets produced by regulated colonial borders,

CONTACT Dandy Badimo dbadimo@ub.ac.bw

representing a progressive shift away from a conservation-centric model towards integrated landscape management (Ron, 2007; Noe, 2010, 2020; Ozguc & Little, 2023).

Beyond biodiversity conservation, TFCAs serve as frameworks for socioeconomic development, interstate economic integration, cultural reconnection and peacebuilding through coordinated, joint initiatives that span national jurisdictions (Muboko, 2017; Blanken et al., 2022; Mpofu et al., 2025). They are categorised into three broad themes, based on their legal status and level of development of the TFCAs. These include '*Category A (TFCAs with a Treaty or other form of legally binding and mutually recognised agreement), Category B (TFCA with an MoU) and Category C (TFCAs at a conceptual stage)*' (Ron, 2007; SADC, 2019).

Within the Southern African Development Community (SADC), the TFCA approach has been widely adopted for conservation and tourism, with 18 transboundary areas proposed or under development, and regional policy commitments to landscape-scale conservation and cross-border tourism (SADC, 2019). The Kavango Zambezi (KAZA) TFCA, formally launched in 2011 as a Category A TFCA, was primarily designed to foster cross-border conservation and nature-based tourism, functioning as a multifaceted, single tourism destination intended to unlock shared ecological, economic and borderless tourism values (Ron, 2007; Linell et al., 2019; SADC, 2019; Blanken et al., 2022; Bourgeois et al., 2023).

Despite the existence of transboundary areas in Southern Africa for over a decade and increasingly promoted as engines of conservation-led development and regional integration (Suich et al., 2005; Myambo & Zengeni, 2019). Empirical assessment of their economic and market dynamics, particularly the tourism market structure, intra-regional demand flows, and equitable benefit distribution, remains limited and a subject of ongoing debate. While member countries have historically competed for market share and international tourists, intra-regional travel accounts for a substantial share of African outbound movement (Noe, 2020). The divergence between low intra-African trade of goods and high intra-African tourism flows suggests that tourism integration could provide a more immediate pathway to deepening regional economic integration (Ngepah & Udeagha, 2018; ElGanainy et al., 2023).

Existing literature focused mainly on governance, human-wildlife conflict and socioecological impacts (Karidozo et al., 2016; Munthali et al., 2018; LaRocco, 2020; Stoldt et al., 2020), yet much work is descriptive or cross-sectional (e.g. Khalid et al., 2021; Okafor et al., 2021; Zuñiga-Collazos et al., 2024) and lacks the longitudinal, econometric rigour necessary to identify causal effects on market shares and regional tourism reconfiguration. Implementation of the TFCA framework without recognising net imbalances between member countries may perpetuate disproportionate benefit flows. Noe (2010) and Ozguc & Little (2023) argue that TFCAs function as heterotopias by altering territorial space. This observation prompts an inquiry into how the heterotopias framework addresses transboundary market integration challenges, such as the siphon effect, where tourism demand and revenues are disproportionately captured by some partner countries, and spatio-temporal chokepoints, which impede equitable benefit flows. These regional integration problems have significant implications for the TFCAs expected outcomes, such as enhanced economic interdependence, but remain marginal in the literature (Suich et al., 2005; Ngepah & Udeagha, 2018; Myambo & Zengeni, 2019).

Therefore, this study analyses the impact of KAZA TFCA formation on the reconfiguration of regional tourism and market shares among member countries: Botswana, Namibia, Zambia, and Zimbabwe. Specifically, it investigates the structure and dynamics of intra-tourism flows to Botswana using measures of guaranteed degree (GD), dependence degree (DD), and mutual dependence degree (MDD), adopted from Zhao et al. (2019). In addition to these descriptive measures, a Controlled Interrupted Time Series (CITS) analysis was employed to improve associative inferences and differentiate policy-linked shifts from broader regional shocks.

The study's originality is twofold: first, it positions market-share reconfiguration as the central outcome of transfrontier conservation area formation, rather than simple changes in tourism volumes. Second, it quantifies intra-regional tourism demand flows using structural interdependence measures. This approach highlights the gap in institutional integration assessment, a notable shift in structure, direction, and balance of regional and border tourism flows in Southern Africa. By combining network-oriented measures of interdependence with a robust quasi-experimental design, the paper contributes methodologically to transboundary tourism economics. The findings aim to identify potential asymmetries in regional tourism flows, institutional and market integration challenges, including siphoning and redistributive effects.

2. Literature review

2.1. Theoretical foundation

2.1.1. Economic interdependence and market integration: A framework for cross-border relationships

Economic interdependence theory describes the mutual reliance among economically connected countries, where transcending simple exchanges creates conditions of mutual sensitivity and vulnerability (Keohane & Nye, 2012; Arkin, 2022). Within transboundary areas, the interconnectedness of countries is evident in shared natural resources and tourism, as countries foster economic connections by encouraging joint resource management, cross-border tourism, and collaborative infrastructure development, enhancing mutual reliance for economic benefits and sustainability (Woyo & Slabbert, 2019; Arkin, 2022).

Border tourism emerged as a central driver of the interdependence, with inbound flows linked to the economic performance of source markets and outbound flows generating spillover effects in destination economies, thereby reinforcing the reciprocal relationship between inbound and outbound tourism demand (Cao et al., 2017; Kožić et al., 2019). However, Wright (2013) eluded that such interdependence is seldom symmetrical and is frequently shaped by disparities in economic size, infrastructure development, political climate, institutional capacity, and the marketing efforts of individual countries.

Complementarity exists between the economic interdependence and market integration theories. The former prioritises the elimination of trade barriers, policy harmonisation, and the optimal intra-regional flow of services and factors of production (Lyu et al., 2023). Market integration is considered a necessary condition for deeper regional economic integration, evident through shared visa regimes, joint destination marketing,

cross-border infrastructure, and policy alignment (Neumayer, 2010; KAZA Secretariat, 2014; Czaika & Neumayer, 2017; Chi et al., 2022; Žvanut & Vodeb, 2023; Akib et al., 2024; Pascual-Fraile et al., 2024; Rosselló & Santana-Gallego, 2024). These measures are expected to reduce travel costs, increase mobility and accessibility, and support multi-destination tourism product development. However, market integration triggers a siphon effect, in which economic benefits are channelled to dominant hubs, exacerbating economic inequalities and exerting significant influence over regional mobility patterns (Myrdal, 1957).

Effective integration requires coordinated marketing, price alignment, product bundling, and mobility facilitation (Noe, 2010, 2020; Kalvelage et al., 2020; Stoldt et al., 2020; Kuguyo & Gandiwa, 2023; Pascual-Fraile et al., 2024). In this context, competitive and cooperative advantages have become central, emphasising destinations leveraging unique assets to outperform rivals, while cooperative advantage highlights collaborative strategies that generate collective gains greater than individual competition (Hall, 2007; Zhang & Jensen, 2022). Collectively, these complementary approaches underpin the ongoing reconfiguration of the KAZA TFCA, shaping regional tourism flow.

The KAZA Secretariat provided the institutional framework for implementing regional market integration initiatives, such as UniVisa, a special joint tourist visa that facilitates multi-country travel between Zambia and Zimbabwe (Douglas et al., 2012; Myambo & Zengeni, 2019), and the KAZA Master Integrated Development Plan, fostering economic interdependence among member states.

2.2. Transfrontier conservation areas (TFCAs) and tourism market reconfiguration

The literature on the impact of Transfrontier Conservation Areas (TFCAs) on intra-regional tourism and market-share reconfiguration reveals diverse arguments concerning their efficacy. TFCAs are recognised as multi-dimensional frameworks crucial for recreating tourism destinations by consolidating fragmented protected areas into ecologically integrated destinations (SADC, 2019; Blanken et al., 2022; Mpofu et al., 2025). These cross-border conservation spaces offer an enhanced, diverse tourism product, fostering economies of scale in marketing and increasing tourist arrivals (Hanks, 2003). Transboundary areas are formed with a dual mandate of conservation and equitable socioeconomic development (Mpofu et al., 2025). Balancing these objectives often remains a persistent challenge, as conservation often fails to translate into a genuine regional development. Achieving the developmental potential of TFCAs requires inclusive governance (Bakker & Messerli, 2017; Scheyvens & Biddulph, 2018), equitable benefit-sharing (Noe, 2020; Bourgeois et al., 2023), cross-border cooperation (Tichaawa & Lekgau, 2024) and community participation (Munthali et al., 2018). A critical point of departure for promoting intra-tourism is ensuring resilience within the transboundary areas. Tourism sustainability requires policies that strengthen local and cross-border supply chains and participatory governance to empower marginalised nations (Bakker & Messerli, 2017; Scheyvens & Biddulph, 2018).

While transboundary areas aim to promote connectivity and mobility for non-human species by eliminating traditional human-centric borders, Munthali et al. (2018) emphasise that TFCAs' borders remain political rather than ecological, and their

implementation often results in expanded state-controlled park space rather than a truly shared landscape. This creates a highly managed network where the efficiency and permeability of invisible, point-based barriers drive territorial reconfiguration. Scholars have conceptualised this process as 'b/ordering' (Miller, 2020), wherein the absence of physical borders introduces invisible legal and administrative filters, characterised as 'new borders without fences' (Noe, 2010) and 'spatio-temporal chokepoints' (Ozguc & Little, 2023). These filters, such as visa requirements and policy restrictions, concentrate sovereign power at specific nodes, such as the Kazungula Bridge, effectively acting as barriers regulating tourism market share and interdependence.

In Southern Africa, TFCAs are promoted as borderless spaces that integrate fragmented ported areas into unified ecological and tourism landscapes (Noe, 2010; Bhatasara et al., 2013). However, they function as sites of ongoing re-bordering through wildlife corridors, the legal framework, and exclusionary discourses that regulate access and reshape power relations (Kachena & Spiegel, 2018; Stoldt et al., 2020). While synchronised visa policies and joint marketing campaigns are powerful strategies for boosting international tourism (Douglas et al., 2012; Chi et al., 2022; Pascual-Fraile et al., 2024; Rosselló & Santana-Gallego, 2024), expanded regional markets face challenges, including varying institutional capacities, divergent interests, unharmonised policies and uneven scale of tourism development (Linell et al., 2019; Tichaawa & Lekgau, 2024). These challenges hinder TFCAs' aims of achieving borderless integration, exacerbating uneven tourist flows and unequal regional tourism market share, with some countries gaining disproportionately (Bhatasara et al., 2013).

3. Materials and methods

3.1. Study site

The KAZA TFCA (Figure 1) encompasses 520,000 km^2 across Angola, Botswana, Namibia, Zambia, and Zimbabwe in Southern Africa and is one of the world's largest transfrontier conservation areas (SADC, 2019; Blanken et al., 2022). Established in 2011 to mitigate ecological fragmentation caused by colonial borderers, KAZA adopted a transitional strategy integrating environmental management with tourism-led development (Linell et al., 2019). The region supports the world's largest elephant population and world-renowned scenery, including the Okavango Delta, Victoria Falls, and the Zambezi River, making it a site of global biodiversity significance, which underpins a nature-based tourism product (Munthali et al., 2018). Intra-regional tourism performance has been strengthened by strategic initiatives and investments, including KAZA UniVisa, aimed at establishing a mega-ecotourism destination (Suich et al., 2005; Douglas et al., 2012; Myambo & Zengeni, 2019; Blanken et al., 2022). Tourism markets within these regions function as interconnected systems, exhibiting dynamic co-movements, spillover effects, and redistributive patterns.

3.2. Data

Due to data availability constraints, the study utilised bilateral tourist arrivals between Botswana and its neighbours, Namibia, Zambia, and Zimbabwe, excluding Angola.

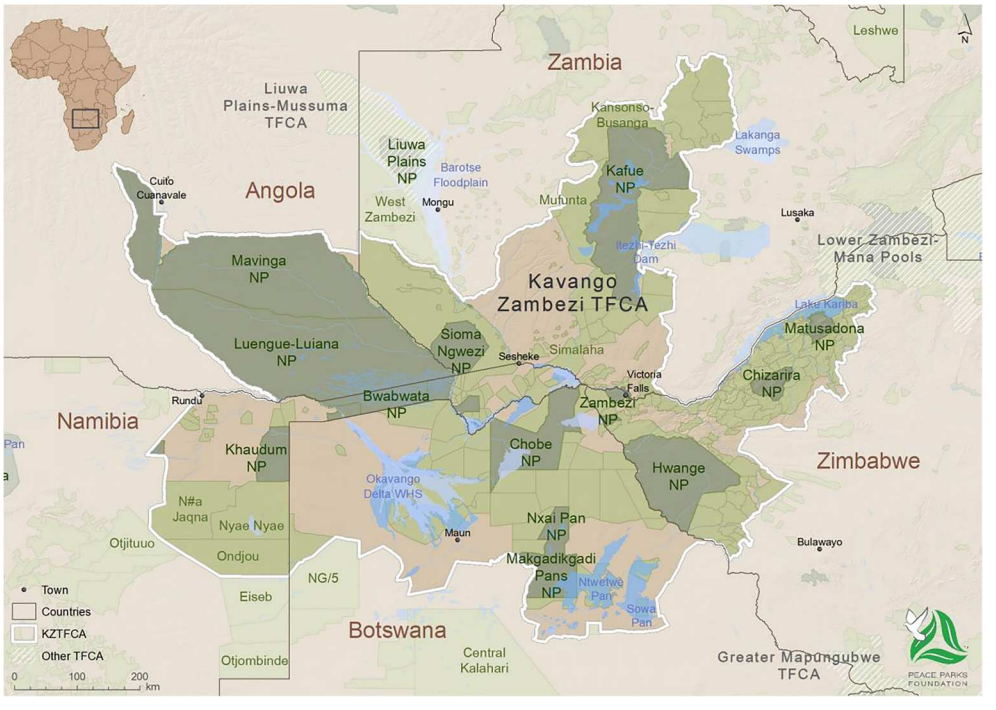

Figure 1. KAZA TFCA showing different protected area categories. Source: Blanken et al. (2022).

Data on tourist arrivals from 2005 to 2023 were sourced from the national statistics agencies of the respective member countries. The tourism market share was defined as a proxy measure calculated by multiplying the annual number of tourist arrivals from their regional countries to a destination country by 100, relative to the gross tourist arrivals from all KAZA member states. The study analysed the dynamic impact of KAZA TFCA formation from Botswana's perspective, drawing on comprehensive intra-trade and tourism data. The conservation-led tourism success provides a robust case for examining how a dominant partner economy can drive regional tourism dynamics and the siphon effect. South Africa, which is not a member of KAZA and does not share the same transboundary policy exposure, but is the primary gateway and dominant economy in Southern Africa, has been included as a structural comparator to capture regional tourism trends unexplained by KAZA-specific policy. The inclusion is to enhance the findings' vigour and mitigate biasness (Rogerson & Kiambo, 2007), and it is acknowledged that South Africa's structural dominance makes it an imperfect counterfactual.

3.3. Methods

Anchored in the theoretical perspective of tourism interdependence, the study adopted the method of Zhao et al. (2019) to quantitatively assess the interdependence relationship between Botswana and other KAZA members. This paper utilises three indicators, guarantee degree, dependence degree, and mutual dependence degree, to describe the

tourism-share interdependence, complementing traditional flow and market-share measures by capturing directional asymmetries. The significance of interdependence indicators arises from the inherent design of TFCAs to foster spatial integration, minimise institutional barriers, and strengthen cross-border complementarities. Simultaneously, interdependence and market integration theories emphasise that actors are embedded within relational systems in which behaviours are mutually determined. The indicators quantify these relational ties, demonstrating how tourism demand shocks transmit across borders and how the region operates as a semi-integrated tourism network. This approach aids in identifying countries that serve as hubs and those that function as dependent nodes, and in tracking structural changes in the system following the formation of TFCAs. The indicators are presented below.

The guarantee degree (GD) is used to evaluate the level of support that arises from the interactive dynamics of mutual trade. This is a measure of the extent to which country *j* guarantees tourism arrivals for Botswana in year *i*. The calculation model for GD is:

$$\text{Guarantee Degree } (GD_{ij}) = \frac{x_{ij}}{\sum_{j=1}^{m} x_{ij}} * 100$$

where GD_{ij} represents the guarantee degree that country *j* holds for Botswana in year *i*; x_{ij} represents the number of tourist arrivals from country *j* to Botswana in year *i*; and *m* is the number of KAZA member countries with tourists travelling to Botswana in year *i*. The higher the GD, the more significant country *j* is to Botswana in terms of tourism market share.

Dependence degree (DD) is used to evaluate the level of dependence that other KAZA country members have on Botswana in terms of tourism share or contribution structure. The calculation model for DD is:

$$\text{Dependence degree } (DD_{ij}) = \frac{y_{ij}}{\sum_{j=1}^{n} y_{ij}} * 100$$

where DD_{ij} represents the dependence degree that KAZA member countries have in relation to Botswana's tourism share in year *i*; y_{ij} represents the number of Batswana tourist arrivals; *j* (exports) to other KAZA member countries in year *i*, and n is the number of KAZA member countries in year *i*. The higher the DD is, the more significant Botswana is to the country that exports tourists.

The mutual dependence degree (MDD) is used to evaluate the interdependence between two countries, A and B, in their tourism trade. The calculation model for MDD is:

$$\text{Mutual dependence degree } (MDD_{ij}) = \frac{y_{ij}}{\sum_{j=1}^{n} y_{ij}} / \frac{x_{ij}}{\sum_{j=1}^{m} x_{ij}}$$

Based on their MDD values, countries in the KAZA TFCA in relation to Botswana can be categorised into three types. The first type is 'passive' (MDD>1) with respect to their relationship with Botswana, where the country relies more on exporting tourists to Botswana than Botswana relies on tourists from them. This implies that the country is in a relatively passive position regarding tourism trade with Botswana. The second type comprises countries that are 'equal' *(MDD = 1)* to Botswana; the degree to which it relies on inbound tourist arrivals from Botswana is almost equal to the degree to which Botswana relies on

inbound tourist arrivals from it. The third 'active' type *(MDD<1),* where a country relies less on tourists from Botswana than Botswana relies on inbound tourists from them. This implies that the country is actively engaged in tourism trade with Botswana.

For methodological rigour and robustness, the study employed the Controlled Interrupted Time Series (CITS) model to augment the interdependence indices analysis, thereby enhancing its policy relevance. As a quasi-experimental approach, CITS quantifies changes at the level of immediate shifts in GD and gradual changes over time before and after an intervention and assesses the statistical significance of these differences (Linden, 2015; Linden & Arbor, 2017; Fox et al., 2022). The model determines the significant level or slope change in Botswana's tourism guarantee degree, as a dependent variable, relative to other member countries after the KAZA formation. To capture these changes, a step dummy variable was employed, assigning 1 for the post-intervention period (2011 onwards) and 0 otherwise. The analysis focused exclusively on the leisure tourists' segment. Leisure tourists are expected to be more responsive to transboundary ecological expansion and multi-country tourism packages.

To investigate the impacts of KAZA TFCA, two models were run: a full model (2005–2023) and a reduced model (2005–2019), excluding the effects of the COVID-19 pandemic. An advantage of the CITS model is its ability to control for observable confounding factors, thereby ensuring a high degree of internal validity (Campbell et al., 1963). The model specifically estimated policy-associated changes of the KAZA TFCA's formation on Botswana's leisure tourism GD using treated countries (Namibia, Zimbabwe, Zambia) and setting South Africa as a control group. This design improves the basic ITS design by incorporating a control group, enabling both within- and between-group comparisons and strengthening control for potential confounding factors, as noted by Bernal et al. (2019). Below is the CITS analysis framework:

$$GD_{it} = \beta_0 + \beta_1 time_t + \beta_2 post_t + \beta_3 treated_i + \beta_4 (time_t * treated_i) + \beta_5 (post_t * treated_i) + \beta_6 (time_t * post_t) + \beta_7 (time_t * post_t * treated_i) + \alpha_i + \varepsilon_{it}$$

Where;

GD_{it} is a leisure guarantee degree from country i to Botswana at time t
$time_t$ is a continuous time variable (e.g. 1 for 2005, 2 for 2006, … , 19 for 2023)
$post_t$ is a binary indicator (0 before 2011, 1 from 2011 onwards)
$treated_i$ is a binary indicator (1 if treated country [Namibia, Zambia, Zimbabwe], 0 if control country [South Africa])
α_i is an unobserved country-specific fixed effect
ε_{it} is the Error term
β_0 represents the control group,
β_1 is the baseline trend in the control group before the intervention,
β_2 immediate level change in the control group after intervention,
β_3 is the average level difference between treated and control before intervention,
β_4 is the trend difference between the treated and control groups prior to intervention
β_5 Is the slope difference between the treated and control groups after intervention
β_6 and β_7 are the level and trend difference, respectively, between treatment and control groups following the introduction of the intervention.

4. Results

4.1. Inbound and outbound tourism demand in KAZA TFCA in relation to Botswana

Figure 2 shows a slight reconfiguration of regional tourism interdependence, particularly in inbound tourism travel patterns to Botswana from 2005 to 2023. While Zimbabwe accounted for most tourist arrivals in Botswana before the KAZA TFCA was formed, a redistribution of market share occurred post-2011. South Africa consistently served as the dominant source market, with tourist arrivals significantly higher than those from Zimbabwe or Namibia throughout the period. South African tourist arrivals peaked at over 800,000 from 2005 to 2007, compared to Zimbabwe's peak of less than 250,000 in 2007.

A notable shift was observed following the KAZA Treaty in 2011, hailed as a pivotal moment for regional integration and tourism development. However, the strategic milestone did not lead to an immediate surge in tourist arrivals for most nations. For instance, Zimbabwe's numbers showed a significant downward trend after their 2010 peak. While more stable, arrivals in Zambia and Namibia did not show the expected growth. South Africa tourist arrivals declined sharply from 2008 to 2011, but they recovered and grew steadily from 2012 to 2018. This recovery reinforced South Africa's regional dominance as a primary source market.

Figure 3, which illustrates outbound tourist flows from Botswana, reveals a clear pattern of regional interdependence with less movement to KAZA TFCA members. Botswana predominantly visited South Africa, with tourist numbers consistently exceeding all other KAZA members. Outbound tourists to South Africa peaked at over 800,000, while visits to Namibia and Zimbabwe remained at lower volumes. Despite the fewer visitations to Namibia, Figure 3 revealed a minimal but steady increase over the post-2011 period, indicating a consistent, albeit smaller, tourism corridor between Botswana and Namibia. These dynamics highlight a travel pattern concentrated towards a single dominant

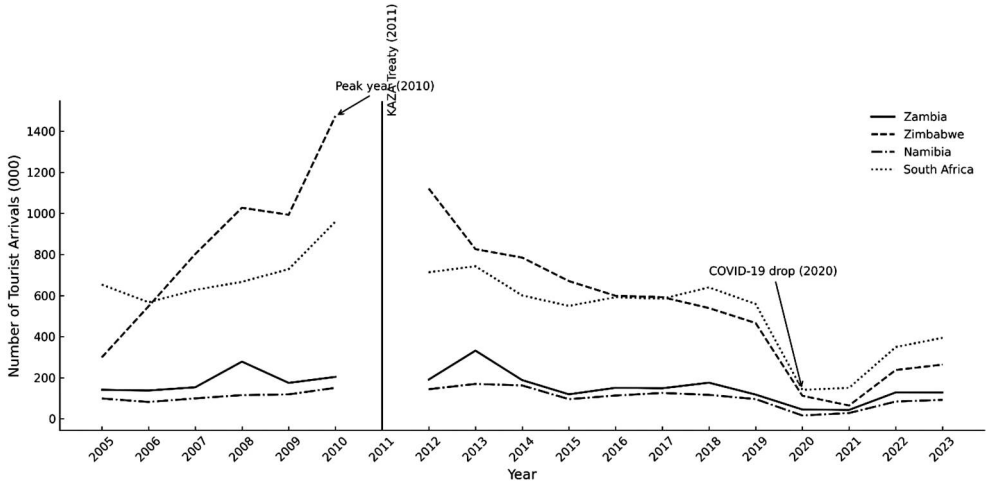

Figure 2. Tourist arrivals to Botswana from KAZA member Countries (inclusive of SA) 2005–2023.

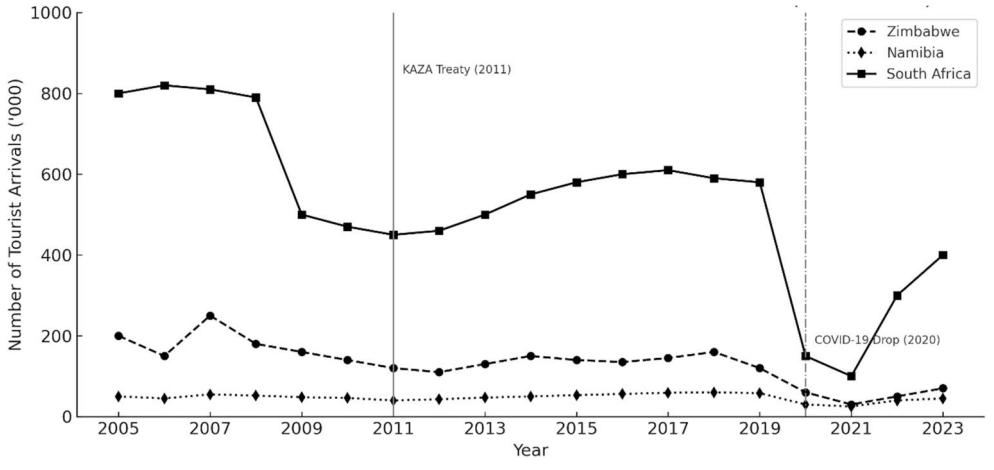

Figure 3. Outbound tourist flows from Botswana to KAZA member countries (Zimbabwe, Namibia, and South Africa) from 2005 to 2023.

destination. In general, the synthesis of Figures 2 and 3 illustrates a weaker bidirectional relationship within the KAZA TFCA.

4.2. Interdependence relationships in terms of tourism share and tourists' flow

4.2.1. Guarantee degree (GD)

The GD, which measures inbound tourism market share and contribution structure, shows a mixed pattern of volatility and shifting contribution structures among the three KAZA member countries (Table 1). Despite instability, Zimbabwe remained an important source of tourists to Botswana, with its market share occasionally exceeding 40% before the formation of the KAZA TFCA. This pattern was evident even for both business and leisure categories (Figure 4). However, this dominance has weakened recently, with its market share in the business category dropping from over 50% in 2014/15 to 15.2% in 2023. This drop is consistent with the influence of macro-level political and economic instability on tourism flows.

Conversely, Namibia's GD showed a modest but stable contribution, maintaining a market share of around 6% between 2005 and 2010 (Table 1). Post-2011, Namibia showed steady growth in the leisure tourism market share and an impressive growth trajectory in the business category after COVID-19, reaching 9.7% in 2022 (Figure 4). Zambia's GD was more erratic and unpredictable, particularly in the leisure category, with a pre-KAZA increase followed by a sharp decline, from 18% in 2008 to 1.5% in 2013 (Table 1 and Figure 4). As a control group, South Africa's GD provided a useful, temporal baseline for regional trends. It remained Botswana's tourism lifeline, often exceeding 40% among leisure tourists and peaking at 70% during the post-2020 recovery period (Table 2).

4.2.2. Dependence degree (DD)

The DD measures Botswana's outbound tourism orientation towards KAZA member countries. The results show that Botswana plays a modest role in the tourism share of

Table 1. Botswana tourism guarantee degree (overall, leisure and business).

	Guarantee degree (GD)																		
	Overall																		
Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Namibia	8.3	6.1	5.9	5.5	5.9	5.4	.	6.6	8.2	9.4	6.7	7.8	8.7	7.9	7.7	5.1	9.8	10.5	10.5
Zambia	11.8	10.3	9.1	13.3	8.7	7.3	.	8.8	16.0	10.9	8.3	10.4	10.2	11.9	9.5	14.4	15.1	16.1	14.6
Zimbabwe	25.1	41.0	47.7	49.2	49.3	52.9	.	51.7	39.9	45.2	46.7	41.2	40.8	36.6	37.6	35.7	22.6	29.7	30.0
South Africa	54.8	42.5	37.3	31.9	36.1	34.4	.	32.9	35.9	34.6	38.3	40.7	40.3	43.5	45.1	44.8	52.6	43.7	44.9
Leisure																			
Namibia	2.1	2.8	2.7	2.4	2.0	1.9	.	2.2	2.7	4.9	4.5	9.5	5.3	8.5	8.1	6.4	4.9	7.8	7.7
Zambia	6.1	8.4	13.0	18.0	9.8	13.4	.	15.7	1.5	2.2	2.0	2.0	15.6	12.4	3.0	8.1	2.0	4.0	3.5
Zimbabwe	28.0	19.8	27.7	32.6	31.4	29.7	.	53.9	42.3	19.6	17.9	11.8	29.9	18.3	13.6	36.5	5.4	16.4	17.4
South Africa	63.8	69.1	56.6	47.0	56.8	55.0	.	28.2	53.6	73.3	75.5	76.7	49.2	60.8	75.3	49.0	87.7	71.8	71.4
Business																			
Namibia	2.1	2.3	1.9	1.4	2.2	1.6	.	2.0	2.8	1.9	1.5	2.0	2.3	2.3	3.0	1.8	5.8	9.7	8.3
Zambia	7.8	7.3	11.9	18.9	8.5	6.1	.	7.5	29.9	14.9	11.3	14.4	11.0	17.5	14.3	11.0	6.8	14.6	18.9
Zimbabwe	4.6	19.5	26.5	30.9	34.7	43.2	.	47.6	32.6	56.3	55.1	46.1	48.4	31.6	25.7	21.1	15.7	15.1	15.2
South Africa	85.5	70.9	59.7	48.8	54.6	49.0	.	43.0	34.7	26.9	32.2	37.5	38.4	48.6	57.0	66.2	71.7	60.6	57.6

N.B. 2011 data is missing from the data sources.

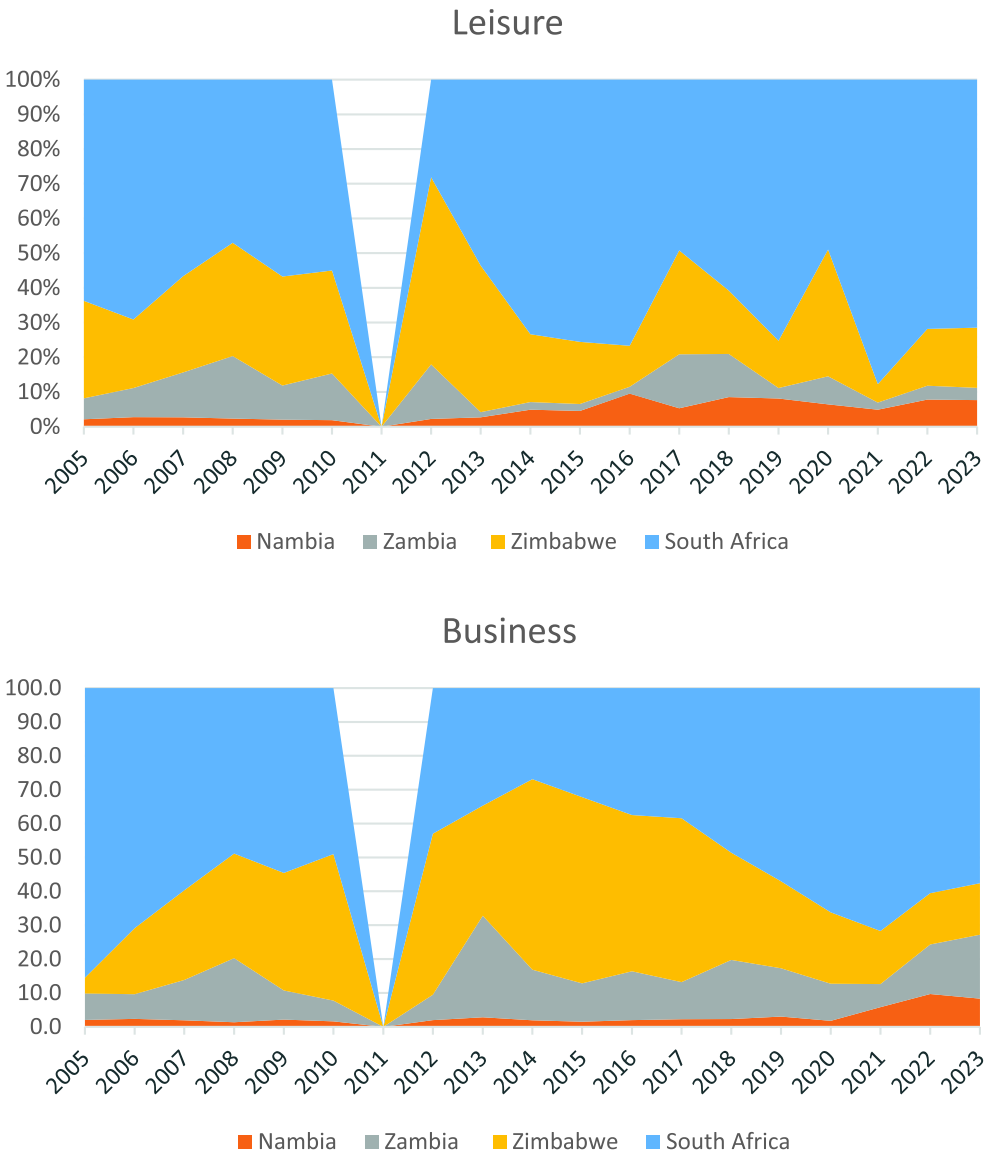

Figure 4. Leisure and business tourism guarantee degree trend contribution structure to Botswana from KAZA countries.

other KAZA members; however, its outbound travel is highly concentrated on a single destination, South Africa. South Africa consistently held the highest DD, with values ranging from 0.7 to 0.9 from 2005 to 2023 (Table 2), indicating that the majority of Botswana's outbound tourism to the KAZA region is directed towards South Africa. This high degree of dependence suggests a strong economic and social link. Conversely, Namibia and Zimbabwe had very low DD values, typically ranging from 0.0 to 0.2, indicating minimal tourism flow from Botswana. Namibia's DD was consistently around 10% over the study period. Moreover, Zambia's DD was 0.0 throughout the entire period, suggesting that outbound tourism from Botswana to Zambia was virtually non-existent or statistically insignificant.

Table 2. Botswana tourism dependence degree and mutual dependence degree (MDD).

Dependence degree (DD)																			
Overall Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Namibia	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Zambia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zimbabwe	0.2	0.1	0.2	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
South Africa	0.8	0.9	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Mutual dependence degree (MDD)																			
Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Namibia	0.004	0.006	0.006	0.006	0.008	0.011	0.000	0.008	0.007	0.006	0.010	0.008	0.008	0.008	0.011	0.009	0.008	0.006	0.011
Zambia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Zimbabwe	0.007	0.002	0.004	0.003	0.005	0.003	0.000	0.002	0.002	0.002	0.002	0.003	0.003	0.004	0.002	0.003	0.002	0.004	0.004
South Africa	0.014	0.872	0.757	0.817	0.690	0.767	0.756	0.827	0.848	0.833	0.813	0.807	0.787	0.792	0.831	0.801	0.824	0.824	0.758

4.2.3. Mutual dependence degree (MDD)

The MDD, which assesses the bilateral tourism relation, revealed a largely skewed relationship between Botswana and its KAZA partners (Table 2). Despite other KAZA members contributing significantly to Botswana's inbound tourism, Botswana plays a minimal role in their tourism market share. The MDD with Namibia has shown a consistent increase since the formation of the KAZA TFCA, suggesting the positive effects of regional marketing strategies, bilateral policy harmonisation, and infrastructure upgrades. However, the MDD for Zambia and Zimbabwe remained very low, between 0.002 and 0.011 (Table 2), despite high inbound flows to Botswana, highlighting a fragile relationship that may stem from the underutilised bilateral marketing and a lack of joint cross-border circuits. The consistently high MDD with South Africa (Table 2) reflected a deeply entwined and symbiotic tourism relationship.

4.3. CITS model: The impact of KAZA TFCA formation on bilateral tourist arrivals to Botswana as measured by the guarantee degree (GD)

The CITS model outputs were consistent with the basic assumptions, as the *time_treated* variable was insignificant (p-value > 0.10), indicating that KAZA members and the control group had similar trends post-2011, with minimal differences in coefficients between the reduced and full models (Table 3; Figure 5). This is consistent with the parallel-trends assumption and supports interpreting post-2011 differences as plausibly associated with KAZA's establishment. The *post-treated* and *time-post-treated* variables revealed mixed outcomes for KAZA partners. Zimbabwe had a significant positive immediate reaction to the KAZA TFCA formation relative to the control group (β_5 = 40.758, p-value < 0.01 for the full model; Table 3). KAZA formation was associated with a modest but sustained increase in Namibia's GD trend (*time_post treated*) to Botswana of 0.5%, likely due to bilateral promotions and enhanced border fluidity. The trend was further confirmed in Figure 5.

Table 3. Leisure inbound tourism GD.

	Namibia		Zambia		Zimbabwe	
	GD (F)	GD (R)	GD (F)	GD (R)	GD (F)	GD (R)
time	1.633	1.715	1.633	1.715	1.633	1.715
	(1.3)	(2.185)	(1.3)	(2.185)	(1.3)	(2.185)
treated	−49.648***	−49.36***	−45.454***	−45.167***	−28.954***	−28.667**
	(6.345)	(9.219)	(6.63)	(9.432)	(7.574)	(10.166)
post	−10.005	−10.196	−10.005	−10.196	−10.005	−10.196
	(15.703)	(21.144)	(15.703)	(21.144)	(15.703)	(21.144)
time_treated	−1.739	−1.821	−.327	−.409	−.256	−.338
	(1.303)	(2.187)	(1.419)	(2.263)	(1.563)	(2.363)
post_treated	7.937	2.749	13.034	9.322	40.758*	64.383**
	(15.824)	(21.192)	(17.407)	(25.503)	(22.832)	(28.773)
timepost_treated	.507***	1.016***	−1.595**	−1.237	−3.64**	−5.869***
	(.155)	(.165)	(.727)	(1.307)	(1.384)	(1.741)
_cons	52.334***	52.047***	52.334***	52.047***	52.334***	52.047***
	(6.332)	(9.209)	(6.332)	(9.209)	(6.332)	(9.209)
Observations	36	28	36	28	36	28
R-squared	.912	.909	.893	.88	.757	.746

Robust standard errors are in parentheses.
*** p < .01, ** p < .05, * p < .1.
N.B. F & R represent full and reduced models, respectively.

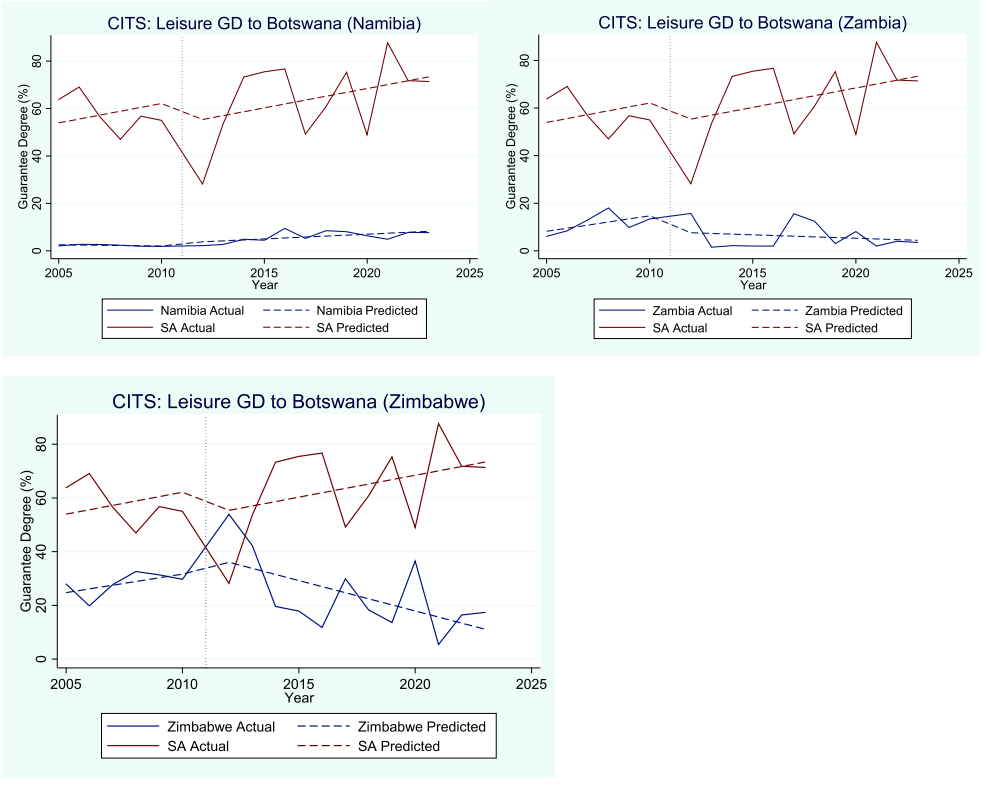

Figure 5. Estimated leisure tourist guarantee degree for KAZA member countries and South Africa as a control group. Full Model output.

Zambia and Zimbabwe experienced a significant decline in their GD trend post-2011, in both full and reduced models (Figure 5), with a decrease of approximately 1.6 and 3.6 percentage points, respectively, at the 5% significance level. The Zambia-Zimbabwe UniVisa introduced in 2014 may have redirected travel itineraries towards the bilateral corridors; a 5% increase in tourist arrivals from Zambia to Zimbabwe in 2019 coincided with a 32% decrease in Zambian tourists to Botswana, which is consistent with, but does not establish, such a redirection.

5. Discussion

This study examined the reconfiguration of regional tourism market share within the Kavango Zambesi Transfrontier Conservation Area (KAZA TFCA), focusing on Botswana's role as a major anchor destination. Despite this overarching KAZA institutional framework, the structural interdependence between Botswana and Namibia remains notably constrained, as evidenced by stagnation in the guaranteed degree (GD), dependence degree (DD), and mutual dependence degree (MDD). Cross-border tourism flows and market integration did not significantly improve, as Botswana accounted for approximately 7% of Namibia's total tourist market share in 2023 (Ministry of Environment, Forest and Tourism, 2024). These disparities stem from divergent tourism models;

Botswana's high-value, low-volume luxury safaris against Namibia's flexible, self-drive experience centred on its desert landscape (Muchapondwa & Stage, 2013), suggesting that structural differences may constrain the development of integrated travel circuits, as Namibia's tourism remains highly localised. Furthermore, non-economic factors, including human-wildlife conflict and the militarised protection of wildlife assets, elevate security concerns for international travellers that deter transboundary movement (Stoldt et al., 2020; Lenggenhager & Mogende, 2024).

The relationship between Botswana, Zimbabwe and Zambia is characterised by episodic involvement rather than linear growth. Zimbabwe's contribution to the regional market remains susceptible to exogenous shocks, particularly political instability and macroeconomic crises (Makoni et al., 2023). This pattern is consistent with a dynamic in which crises in one partner state may displace tourism to neighbours, though isolating this effect from broader macroeconomic and exchange rate fluctuations. While Zambia's inflows are comparatively steadier due to infrastructure improvement, they remain geographically localised in scale (Kalvelage et al., 2020). Although the KAZA UniVisa was expected to catalyse tourist flows between Zimbabwe and Zambia, results show a decline in arrivals and a possible reconfiguration of bilateral itineraries over the study period. Operational inefficiencies and limited systematic monitoring are plausible contributing factors, as suggested by the literature (Douglas et al., 2012; Myambo & Zengeni, 2019). Furthermore, the UniVisa 24-hour allowance provision for Botswana might have contributed to the decline, consistent with Woyo & Slabbert (2019), who characterise restrictive visa arrangements as 'drivers of exclusivism' that might hinder outbound tourism growth. Similarly, the anticipated surge following the completion of the Kazungula Bridge requires empirical evidence from border posts to verify the extent of itinerary reconfiguration.

The findings indicate that interdependence within the KAZA remains directional rather than reciprocal. Tourism flows are concentrated in structurally stronger economies, with Botswana and South Africa serving as central nodes within the regional ecosystem. Botswana's position as a high-value, conservation-led destination, together with South Africa's continued function as a regional gateway and economic hub, confirms the siphon effect (Bhatasara et al., 2013), which mirrors the role of dominant economies like Thailand in ASEAN (Ramos et al., 2017). The effect arises from structural disparities in product quality and diversity, risk perception, pricing and complex marketing channels (Bhatasara et al., 2013). South Africa plays a multifaceted role as both a primary market source and a structural guarantor of Botswana's inbound flows, sustained by deep-rooted economic ties, migratory history, and cultural familiarity (Saayman & Saayman, 2012; Badimo & Yuhuan, 2023). This dominance, however, means the GD trajectory reflects gateway effects absent among KAZA members, limiting counterfactual equivalence.

Overall, the weak tourism interdependence signals implementation gaps within the TFCA framework as well as supply and demand-side constraints, including poor destination differentiation, uncoordinated marketing, and infrastructure gaps (Kalvelage et al., 2020; Stoldt et al., 2020). Intra-regional tourism markets display historical memory, in which enduring social ties, migration pathways, and transport linkages continue to shape flows under new institutional arrangements (Bhatasara et al., 2013). Botswana, a recognised mature tourism destination with efficient border controls and a

strong conservation reputation, secures a disproportionate share of KAZA arrivals. These empirical patterns demand a policy shift; harnessing Botswana's comparative strengths to lead cooperative, region-wide integration. While the KAZA TFCA Treaty provides a robust strategic framework, it has yet to realise the borderless environment it originally envisioned. Botswana and Namibia have advanced institutional frameworks and policy alignment with regional tourism goals, supported by conservation-oriented planning (Tichaawa & Lekgau, 2024), while Angola and Zambia have limited institutional coordination, funding constraints, and fragmented policy implementation, limiting market integration (Lupiya, 2019). According to market integration theory, the findings indicate that the KAZA has not attained the level of functional integration necessary to establish seamless cross-border tourism markets due to transaction costs associated with cross-border mobility, continuing to fragment the regional tourism sector.

6. Conclusion and recommendations

Using Botswana as an empirical anchor due to its tourism sector maturity and data availability, this study provides a quantitative assessment of the tourism market-share reconfiguration of the Kavango Zambezi Transfrontier Conservation Area from 2005 to 2023, offering insights that are regionally and globally transferable to other multi-country conservation and border tourism frameworks.

The results indicate that KAZA member states experienced varying degrees of adjustment in market share and directional dependence following formation. The observed asymmetric co-movement underscores critical disparities in institutional strength, competitiveness, and regional capacity. Furthermore, the formation of KAZA was associated with observable changes in tourism flows. Botswana consolidated its role as a regional hub, driven by stable governance, premium wildlife assets, and high-end tourism products, suggesting a siphon effect on relative market shares. This phenomenon risks concentrating economic benefits, potentially undermining the balanced regional network development envisioned by the KAZA framework of cross-border tourism. This dynamic parallels South Africa's established role within its respective regional frameworks.

KAZA need to acknowledge asymmetry as an intrinsic regional characteristic, necessitating a strategic transition from competitive advantage to cooperative advantage. This theoretical shift requires members to transcend their nation-state interests and embrace joint marketing and branding, harmonised visas, cross-border circuits and investment (e.g. the Kazungula Bridge), and a cohesive policy environment free of conflicting bilateral initiatives (Woyo & Slabbert, 2019; Tichaawa & Lekgau, 2024). Complementary assets enable member states to transform their tourism sectors into a cohesive, higher-yield, multi-destination region. Therefore, Botswana's dominance can facilitate a shift towards cooperative advantage across KAZA, rather than treating competitive and comparative advantages as mutually exclusive. Moreover, the KAZA formation did not uniformly reshape intra-regional tourism. The framework promoted modest, stable growth in Namibia's tourism contribution. Furthermore, the introduction of the KAZA UniVisa yielded inconsistent results, undermining its intended impacts in Zambia and Zimbabwe. The findings highlight a complex interplay between institutional reforms, tourism attractiveness and market integration.

This study advances the literature on transboundary areas by demonstrating that institutional integration alters tourism flows in complex, uneven patterns. It emphasises the importance of monitoring interdependence as an economic indicator of regional cohesion. The results have direct policy implications for transboundary governance and coordinated tourism development strategies aimed at promoting equitable regional growth. Despite data limitations, these findings illuminate common institutional challenges, such as siphon effects, visa frictions, and infrastructure bottlenecks, offering adaptable lessons for other transboundary conservation areas.

This study advocates expanding the KAZA UniVisa to all members, extending itineraries, and diversifying products to capture a greater share of visitor spending, enhance interdependence, and increase intra-regional tourist arrivals. KAZA could leverage complementary tourist attractions in Botswana and Zimbabwe/Zambia by moving beyond day trips to Botswana. Furthermore, KAZA should be recognised as an evolving institutional arrangement that requires ongoing policy coordination and strategic alignment. Therefore, this study acknowledges continued market integration efforts, including the launch of the Rivers of Life branding and the Great KAZA Birding Route (AviTourism) in May 2025 and February 2026, respectively (www.kavangozambezi.org). These are seen as efforts by KAZA to enhance seamless cross-border tourism experience, redistribute flows more equitably and promote the region's collective competitiveness. Future research on KAZA TFCA's long-term economic impacts should examine how added bilateral policies could influence the dynamics of the framework and assess the implications of the KAZA UniVisa expansion on tourist flows. Furthermore, future studies with access to disaggregated border-crossing data, UniVisa issuance records, or multi-site itinerary tracking would produce a firmer assessment of these policy effects.

Disclosure statement

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

ORCID

Dandy Badimo http://orcid.org/0000-0003-0503-8027
Dimpho Malebogo Matlhola http://orcid.org/0000-0003-2908-1986

References

Akib, H, Ismail, Rahman, E, Basra, J & Haedar, A, 2024. Development of integrated tourism destinations based on contextual marketing vis-à-vis digital marketing. In The 3rd International Conference on Humanities Education, Law and Social Sciences. KnE Social Sciences (pp. 1214–28).

Arkin, SM, 2022. Economic interdependence and conflict: An international relations theory analysis. Glatfelter Gazette 3. https://cupola.gettysburg.edu/gazette/3

Badimo, D & Yuhuan, Z, 2023. The relationship between inbound tourism and economic growth: Case of Botswana. Natural Resources Forum 48(1), 16–34. doi:10.1111/1477-8947.12290

Bakker, M & Messerli, H, 2017. Inclusive growth versus pro-poor growth: Implications for tourism development. Tourism and Hospitality Research 17, 384–91.

Bernal, JL, Cummins, S & Gasparrini, A, 2019. Difference in difference, controlled interrupted time series and synthetic controls. International Journal of Epidemiology 48(6), 2062–3.
Bhatasara, S, Nyamwanza, AM & Kujinga, K, 2013. Transfrontier parks and development in southern Africa: The case of the Great Limpopo Transfrontier Park. Development Southern Africa 30(4–5), 629–39. doi:10.1080/0376835X.2013.837377
Blanken, LJ, Chakanga, M, Bollmann, N, Chigodo, K, Gotosa, T, Leineweber, M, Manda, C, Meyer, N, Nganunu-Kröning, M, Nill, D, Nyambe, N, van der Westhuizen, H, & Wambura, G, 2022. 20 years of SADC Transfrontier Conservation Areas (TFCA) investment German development cooperation support to sustainable cross-border management of shared natural resources. German Federal Ministry of Economic Cooperation and Development (BMZ), Berlin.
Bourgeois, R, Guerbois, C, Giva, N, Mugabe, P, Mukamuri, B, Fynn, R, Daré, W, Motsholapheko, M, Nare, L, Delay, E, Ducrot, R, Bucuane, J, Mercandalli, S, Le Page, C & Caron, A, 2023. Using anticipation to unveil drivers of local livelihoods in transfrontier conservation areas: A call for more environmental justice. People and Nature 5(2), 726–41.
Campbell, DT, Stanley, JC, Mifflin, H, Boston, C, Geneva, D, Hopewell, I, Palo, NJ & London, A, 1963. Experimental and quasi-experimental designs for research. Houghton Mifflin Company, Dallas.
Cao, Z, Li, G & Song, H, 2017. Modelling the interdependence of tourism demand: The global vector autoregressive approach. Annals of Tourism Research 67, 1–13.
Chi, P, Lee, K & Chang, K, 2022. Causal effect of tourist visa exemption schemes on international tourist arrivals. Economic Analysis and Policy 75, 427–49. doi:10.1016/j.eap.2022.06.003
Czaika, M & Neumayer, E, 2017. Visa restrictions and economic globalisation. Applied Geography 84, 75–82.
Douglas, A, Lubbe, BA & Kruger, EA, 2012. Would a single regional visa encourage tourist arrivals in Southern Africa? Development Southern Africa 29(3), 488–505. doi:10.1080/0376835X.2012.706042
ElGanainy, AA, Hakobyan, S, Liu, F, Weisfeld, H, Abbas, SA, Allard, C, Balima, HW, Bteish, C, Giri, R, Kanda, DS, Meleshchuk, S, Ramirez, G, Zymek, R, Arora, VB & Lall, S (Eds), 2023. Overview: Unlocking the benefits of regional trade integration in Africa. In Trade integration in Africa: Unleashing the continent's potential in a changing world, Washington, Dc1–54International Monetary Fund.
Fox, HK, Molina, AC & Swearingen, TC, 2022. An interrupted time series approach to assess marine protected area impacts on recreational fishing licence sales. Aquatic Conservation: Marine and Freshwater Ecosystems 32(12), 1970–82.
Hall, CM, 2007. Tourism and regional competitiveness. In J Tribe & D Airey (Eds.), Advances in tourism research: New directions, challenges and applications (pp. 217–30). Elsevier, Oxford.
Hanks, J, 2003. Transfrontier conservation areas (TFCAs) in Southern Africa. Journal of Sustainable Forestry 17(1-2), 127–48.
Kachena, L & Spiegel, S, 2018. Borderland migration, mining and transfrontier conservation: Questions of belonging along the Zimbabwe–Mozambique border. GeoJournal 84, 1–14. doi:10.1007/s10708-018-9905-0
Kalvelage, L, Diez, R & Bollig, M, 2020. Do tar roads bring tourism? growth corridor policy and tourism development in the Zambezi region, Namibia. The European Journal of Development Research 33, 1000–21.
Karidozo, M, La Grange, M & Osborn, FV, 2016. Assessment of the human wildlife conflict mitigation measures being implemented by the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA) partner countries. Report to the KAZA TFCA Secretariat (BMZ No.: 2009 66 788 and BMZ No.: 2006 65 646), Kasane, Botswana.
KAZA TFCA, 2014. Kavango Zambezi transfrontier conservation area master integrated development plan, (2015–2020). Kavango Zambezi Transfrontier Conservation Area Secretariat, Botswana.
Keohane, RO & Nye, JS, 2012. Power and interdependence. Longman, London.
Khalid, U, Okafor, L & Burzyńska, K, 2021. Do regional trade agreements enhance international tourism flows? Evidence from a cross-country analysis. Journal of Travel Research 61, 1391–408.

Kožić, I, Sorić, P & Sever, I, 2019. Interdependence of international tourism demand for Mediterranean countries: Impact of demand shocks. International Journal of Tourism Research 21(1), 97–107.
Kuguyo, TT & Gandiwa, E, 2023. The influence of coordinated wildlife-based tourism marketing mix strategies on the overall tourism performance of Zimbabwe. African Journal of Hospitality, Tourism and Leisure 12(4), 1236–47.
LaRocco, A, 2020. Infrastructure, wildlife tourism, (il)legible populations: A comparative study of two districts in contemporary Botswana. Environment and Planning E: Nature and Space 3, 1074–95. doi:10.1177/2514848619877083
Lenggenhager, L & Mogende, E, 2024. Nature conservation, borders and violence along the Chobe River between Botswana and Namibia in the twentieth and twenty-first century. Journal of Borderlands Studies 40(5), 1177–95. doi:10.1080/08865655.2024.2415024
Linden, A, 2015. Conducting interrupted time-series analysis for single- and multiple-group comparisons. Stata Journal 15(2), 480–500. doi:10.1177/1536867X1501500208
Linden, A & Arbor, A, 2017. A comprehensive set of postestimation measures to enrich interrupted time-series analysis. The Stata Journal 17(1), 73–88.
Linell, A, Sjöstedt, M & Sundström, A, 2019. Governing transboundary commons in Africa: The emergence and challenges of the Kavango–Zambezi Treaty. International Environmental Agreements: Politics, Law and Economics 19(1), 53–68. doi:10.1007/s10784-018-9420-2
Lupiya, A, 2019. The Kavango-Zambezi Conservation Area (KAZA) and its dynamics in Zambia. Faculty of Science, Department of Environmental and Geographical Science, Cape Town. http://hdl.handle.net/11427/31465.
Lyu, S, Chen, Z, Pan, S & Liu, L, 2023. Market integration and economic growth. PLoS One 18(11), e0294467. doi:10.1371/journal.pone.0294467
Makoni, T, Mazuruse, G & Nyagadza, B, 2023. International tourist arrivals modelling and forecasting: A case of Zimbabwe. Sustainable Technology and Entrepreneurship 2(1), 100027.
Miller, M, 2020. B/ordering the environmental commons. Progress in Human Geography 44, 473–91. doi:10.1177/0309132519837814
Ministry of Environment, Forest and Tourism, 2024. Namibia 2023 tourist statistical report. https://www.meft.gov.na/files/files/TOURIST%20STATISTICAL%20REPORT%202023.pdf Accessed 10 July 2025.
Mpofu, E, Radinger-Peer, V, Musakwa, W, Penker, M & Gugerell, K, 2025. Cultural and empowerment priorities amid tensions in knowledge systems and resource allocation: Insights from the Great Limpopo transfrontier conservation area. Ecology and Society 30(1), 9.
Muboko, N, 2017. The role of transfrontier conservation areas and their institutional framework in natural resource-based conflict management: A review. Journal of Sustainable Forestry 36(6), 583–603.
Muchapondwa, E & Stage, J, 2013. The economic impacts of tourism in Botswana, Namibia and South Africa: Is poverty subsiding?. . Natural Resources Forum 37(2), 80–89.
Munthali, SM, Smart, N, Siamudaala, V & Mtsambiwa, M, 2018. Integration of ecological and socioeconomic factors in securing wildlife dispersal corridors in Kavango. Selected Studies in Biodiversity, 181–204.
Myambo, B & Zengeni, N, 2019. So far so KAZA: An assessment of the contribution of the KAZA UNIVISA to tourism performance in Victoria Falls. IOSR Journal of Humanities and Social Science (IOSR-JHSS) 24(3), 49–56. doi:10.9790/0837-2403064956
Myrdal, G, 1957. Economic nationalism and internationalism: The Dyason lectures, 1957. Australian Outlook 11(4), 3–50. doi:10.1080/00049915708565383
Neumayer, E, 2010. Visa restrictions and bilateral travel. The Professional Geographer 62(2), 171–81.
Ngepah, N & Udeagha, MC, 2018. African regional trade agreements and intra-African trade. Journal of Economic Integration 33(1), 1176–99.
Noe, C, 2010. Spatiality and 'borderlessness' in transfrontier conservation areas. South African Geographical Journal 92(2), 144–59.
Noe, C, 2020. Regionalising tourism through transfrontier conservation: Implications for local development in Southern Africa. The African Review 47(1), 97–119.

Okafor, L, Khalid, U & Adeola, O, 2021. The effects of regional trade agreements on international tourist flows in the Middle East and Africa. In MZ Ngoasong, O Adeola, AN Kimbu, RE Hinson (Eds.), New frontiers in tourism, hospitality & event management (pp. 245–62). doi:10.1007/978-3-030-70171-0_15

Ozguc, U & Little, A, 2023. The politics of temporality and the ethos of open societies: Transfrontier conservation areas as spatio-temporal chokepoints. Geopolitics 28(2), 570–92.

Pascual-Fraile, MDP, Villacé-Molinero, T, Talón-Ballestero, P & Chaperon, S, 2024. Post-pandemic collaborative destination marketing: Effectiveness and impact on different generational audiences. Journal of Vacation Marketing 31(3), 665–82.

Ramos, V, Untong, A & Kaosa-Ard, M, 2017. Asean's intra-regional tourism demand to Thailand. Asia Pacific Journal of Tourism Research 22, 909–21.

Rogerson, CM & Kiambo, W, 2007. The growth and promotion of regional tourism in the developing world: The South African experience. Development Southern Africa 24(3), 505–21.

Ron, T, 2007. Southern Africa Development Community (SADC) Proposed Framework for Transfrontier Conservation Areas (TFCAs)-Issues and Options Report.

Rosselló, J & Santana-Gallego, M, 2024. The effect of visa types on international tourism. Economic Modelling 137, 106757. doi:10.1016/j.econmod.2024.106757

Saayman, M & Saayman, A, 2012. Shopping tourism or tourists shopping? A case study of South Africa's African tourism market. Tourism Economics 18(6), 1313–29.

SADC, 2019. Southern African development community (SADC) programme for transfrontier conservation areas (2013). SADC, Gaborone, Botswana. https://www.sadc.int/document/sadc-programme-tfcas-english Accessed 30 July 2025.

Scheyvens, R & Biddulph, R, 2018. Inclusive tourism development. Tourism Geographies 20, 589–609.

Steiner, C & Schröder, V, 2024. More-than-human borderlands of wilderness-transactional relationships and intra-active entanglements between wolves and humans in the Swiss Calanda Region. DIE ERDE–Journal of the Geographical Society of Berlin 155(3-4), 106–19.

Stoldt, M, Göttert, T, Mann, C & Zeller, U, 2020. Transfrontier conservation areas and human-wildlife conflict: The case of the Namibian Component of the Kavango-Zambezi (KAZA) TFCA. Scientific Reports 10, 7964. doi:10.1038/s41598-020-64537-9

Suich, H, Busch, J & Barbancho, N, 2005. Economic impacts of transfrontier conservation areas: A baseline of tourism in the Kavangbalassblano-Zambezi TFCA.

Tichaawa, TM & Lekgau, RJ, 2024. The state of tourism development in transfrontier conservation areas in Southern Africa. Geojournal of Tourism and Geosites 56(4), 1781–90. doi:10.30892/gtg.56433-1347

Timothy, DJ, Saarinen, J & Viken, A, 2016. Tourism issues and international borders in the Nordic Region. Scandinavian Journal of Hospitality and Tourism 16(sup1), 1–13.

Woyo, E & Slabbert, E, 2019. Cross-border destination marketing of attractions between borders: The case of Victoria Falls. Journal of Hospitality and Tourism Insights 2(2), 145–65. doi:10.1108/JHTI-10-2018-0073

Wright, T, 2013. Sifting through interdependence. Washington Quarterly *36*(4), 7–23. doi:10.1080/0163660X.2013.861706

Zhang, J & Jensen, C, 2022. Comparative advantage in tourism. In J Jafari & H Xiao (Eds.), Encyclopedia of tourism. Springer223–243Cham.

Zhao, Y, Liu, X, Wang, S & Ge, Y, 2019. Energy relations between China and the countries along the Belt and Road: An analysis of the distribution of energy resources and interdependence relationships. Renewable and Sustainable Energy Reviews 107, 133–44.

Zuñiga-Collazos, A, Obando, J & Sánchez, A, 2024. Determining factors of regional tourism development based on public policy management. Journal of Infrastructure, Policy and Development 8(12), 8591.

Žvanut, A & Vodeb, K, 2023. Marketing strategies in cross-border tourist destinations: A literature review. Académica Turística 16(3), 313–28.