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RESEARCH PAPER

Tourism-Led Growth and its Sustainability Challenges: Evidence from Pakistan

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ABSTRACT

This current study aims at establishing how tourism development affects economic growth as well as creation of jobs in Pakistan and analyzing the environmental and infrastructural impacts that come with development of tourism with a sustainable tourism paradigm. Tourism has got high recognition as a driver of economic growth, where tourism earns income and creates jobs through increased spending on lodging, transport, food, and recreation. However, an increased pace of tourism growth in developing economies may trigger the deterioration of the environment and excessive load on the infrastructure, which is why the importance of sustainable interventions in the policy should be emphasized. Using annual time series data between the years 1995 and today, the study utilizes the Autoregressive Distributed Lag (ARDL) unit root tests, error correction modelling and bounds tests in estimating both short and long run interdependencies of tourism activity, gross domestic product and employment. It is also possible to evaluate the performance of policy at different times of governance with the use of temporal segmentation. This study portrays a two-sided effect of tourism as it leads to economic development, provision of employment opportunities; at the same time it also leads to environmental degradation and inefficient infrastructural facilities. The effectiveness of policy interventions varies with time. Durable growth is impossible without integrated sustainable tourism policies with environmental protection and development of infrastructure and cultural preservation as the top priority.

KEYWORDS Economic Growth, Tourist's Arrival, Terrorist Attacks, ADRL Model, Employment, Inflation

Introduction

Tourism can be considered as a source of sustainability when it enhances environmental management and maintains the local cultures and economies. Tourism industry is in central space in Pakistan as it has triggered the economic development and the creation of job opportunities. It is characterized by an outstanding natural heritage (the Himalayas, the Arabian Sea, and a large variety of historic sites), which makes it a highly valuable source of sustainable tourism that can regularly stimulate the economic development of the country but at the same time preserve the resources that can be used by future generations. This thesis poses a challenge in the connection between sustainable tourism and the current economic growth in Pakistan, especially detailing the relationship between sustainable tourism and cultural sensitive practices in tourism management and corruption in Pakistan. Using environmental friendliness, tourism can create job opportunities, spur growth, and make the society progress thus contributing towards the growth of a sound economic trend. Whether through environmental stewardship and cultural conservation or due to employment provision and macro-economic stimulus, infrastructure and maintenance of tourism can bring significant

returns to Pakistan that is conducted in line with the best-practice standards. This current paper provides a comprehensive reflection on the issue of sustainable tourism impacting the labor market and macro-economic performance of Pakistan, thus guiding the improvement of the future policy development. Adherence to the requirements of the sustainable development of the world provides Pakistan with a platform to take its tourism levels to the next level as well as strengthening the economic sector capable of creating opportunities to its citizens. The thesis includes the principles of sustainability, empirical case studies, and practical recommendations which are aimed to make the contribution of economic sector more. The acknowledgement of the economic growth as a feature of the societal variables entails judicious apportioning of the chances. Sustainability goes hand-in-hand with human behaviour and aspirations.

As the United Nations, and all other sustainability frameworks, in particular, the Sustainable Development paradigm is consonant to ecological stewardship as well as economic vitality. The comprehensive nature of sustainable development requires that the environmental and social issues be viewed as interdependent and not independent. The recommendations given by the United Nations in 1992 propose adaptive resource management habits that preserve and pass viable environment to the future generation. Tourism in modern discussions is increasingly conceptualized as a critical sustainability indicator and one of the tools that allow to quickly and effectively implement sustainability policies. Having become a global sector, tourism is a bridge to economic growth, intercultural communication and environmental conservation.

However, the links of tourism to overconsumption and a dry water supply do not always comply with the sustainability principles. Based on this, there is a growing trend of eco-friendly tourism practices, which have focused on conservation of ecological environment, welfare of the community, cultural heritage, and preservation of natural resources (Afridi et al., 2023). This lack of control systems and disfavored short-term economic models hinder long-term development (Arshad et al., 2018). The concept of sustainable tourism is enjoyed in a positive manner in Pakistan due to the exotic scenery and the rich cultural heritage. On the other hand, the negative impact of security threats and terrorism acts on the tourism flows into and out of the country is very significant and hence disrupts stability and economic performance (Rauf et al., 2022). According to recent surveys, only 32 per cent. of potential foreign visitors think about visiting Pakistan which is significantly lower than the latent potential of the sector given the present conditions.

The focus on environmental stewardship, social justice and sustainable domestic tourism would make the country be ranked as a prime destination despite being a step towards an equal, sustainable future. Manzoor et al. (2019) assume that sustainable tourism can in fact lead to a positive change in the economic growth of Pakistan. The model predicts future ethical tourism and preservation of natural and cultural resources, which create a demand that can be converted into revenue by the local populations (World Bank, 2023). Tourists also spend money on accommodation, food and entertainment and this stimulates the tourism industry to provide jobs thus having a direct impact of providing the population with employment opportunities. Sustainable tourism projects include training local craftsmen to sell new products to tourists with community-based tourism policies. The improvement of destinations and the increase of the number of visitors are the necessary steps to achieve inclusive development in the regions, in which tourism plays a major role in enhancing the lives of the people, especially in rural regions.

The sustainable tourism agenda of Pakistan is a driver of the economic growth, nature conservation, and local empowerment at the same time (Khan et al., 2023). With the growth of tourism in different destinations, ancillary services such as accommodation, transport, crafts, and guided tours become the more important ones. According to Hassan et al. (2018), this range of services can be regarded as the key to the development of the sphere. The country benefits the inflated number of job opportunities related to the accommodation staff, tour guides, craftspeople, and local entrepreneurs, with the 2023 World Bank data proving such data. In 2009, the World Travel and Tourism Council (WTTC) estimated 230 000 direct jobs and 724 000 total jobs in 2009 which are products of visitor expenditure. Although employment is one of the pillars of the economic development of Pakistan, excessive use of mass tourism with environmental destruction may threaten the future of the country in the long run. It goes without saying that the promotion of sustainable tourism requires a multidisciplinary approach along with the focus on environmental management as well as social and economic aspects.

This strategy can help policy makers to balance the good and the bad impacts of tourism. Creating a sustainable tourism balance in Pakistan would protect cultural and natural resources in the country, offer assistance to local communities as well as the sustainability of tourism development. Close to an efficient sustainability strategy includes the active involvement of the community in general, which allows firms to be on the forefront of tourism products and instances of participative developments that portend the emergence of a more optimistic prospective economy. Sustainable tourism projects to promote and invest in the indigenous landscapes and culture do not only create jobs but also provide additional support to the community and improve its strength and unity (Manzoor et al., 2019). Tourism is the fastest growing and biggest sector in the world as it is already an invisible type of export which has little impact on the exchange rates.

In 2006, Pakistan attracted 8.3 trillion tourists boosting revenue by $4.95 trillion equating to 7.9 trillion percent of the GDP of this country. Pakistan is rated as an up-and-coming economy in the sphere of tourism by WTTC. The industry will be a huge income earner and has a high potential for growth. Sustainable tourism can make use of this potential if it is applied judiciously. Another interesting feature of sustainable tourism is its ability to provide cost-effective returns by promoting the ecological and cultural benefits to the maximum. Sustainable tourism provides essential revenue and a culture boost in the areas in rural areas where economic opportunities are minimal. Pakistan also has the potential to demonstrate how tourism can be used to drive inclusive development and conduct aid to underserved areas through community-based tourism and environmental and cultural heritage protection (Malik & Iqbal, 2020). Sustainable activities, particularly revenue-generating programs, have a trickle effect on the economic system in general. The rural destinations can also be featured by tourism marketing hence equitable distribution of revenue (World Bank Perception, 2023).

Environmental tourism has potential of improving economic performance and conserving natural and cultural heritage so that the future generations can use them. Pakistan can be transformed into a sustainable tourism project where the activities are grounded on community empowerment, resilience and sustainability of all stakeholders. Application of sustainable tourism as an essential driver of the national economy and labor market is a strong but relatively undiscovered field of research.

It has been established that sustainable tourism has been associated with economic growth, job creation; the concern, however, is that little is known about the

environmental and labor effects in the Pakistani context. The available scholarship and practitioner activities in the nation have so far not adequately investigated the impacts of eco-tourism on the national economy particularly through the lens of ecological and socio-economic resilience. The enlightening importance of the fact that environmentally sustainable tourism helps the reduction of such adverse factors explains the urgency of increased research to enhance the economic and social conditions in Pakistan. There is a need to attempt an estimate of the contribution of tourism to economic growth. The importance and scale of studying sustainable tourism development and employment in Pakistan are very high.

The information obtained because of this research will enhance our knowledge of the ways in which sustainable tourism will help in diversifying a still much dependent economy, which is rested on agriculture and manufacturing, in terms of economic stability and stimulation. The paper highlights how sustainable tourism can provide job opportunities in isolated areas, enhance environmental conservation as well as the improvement of cultural heritage. The findings will be used to guide the policymakers in coming up with community-building and environmental conservation policies. The study thus adds value to the body of sustainable tourism literature in developing situations, which supports the Pakistani efforts to build its image in the global arena and gain foreign investments as a responsible and desirable destination.

Literature Review

This section provides an in-depth review of the existing literature that assesses the impacts of sustainable tourism growth on the rates of unemployment and growth in Pakistan. The scholarship highlights numerous benefits to be brought because of tourism, which include macroeconomic development, poverty reduction, and environmental management. Khan et al. (2001) focused their study on the impact of tourism to the economic paths of the developing countries where Pakistan is one particular focus. Based on their empirical measurements, they found out that a small one-percentage-point strengthening in the tourism activity would trigger a 0.051 percentage-point improvement in the gross domestic product, a 2.647 percentage-point augmentation in the foreign direct investment, and a .51 percentage-point decrease in the poverty rates.

These findings support the fallacy that, in the case of Pakistan, the active tourism promotion forms one of the possible channels of promoting the development of the economy, and, at the same time, the alleviation of poverty. Based on this, the policymakers ought to consider formulating effective, holistic tourism policies that will be able to support and enhance these gains. Jayathilake (2013) investigated the correlation between tourism and GDP growth in Sri Lanka and found that there is a long-term positive correlation. The paper reveals that any economic jump occasioned by influx of tourists produces a positive ripple effect within the economy, hence indicating that the Sri Lankan government should focus on activities that will help it increase the number of tourists as a strategic tool in driving macro-economic growth. Tahira et al. (2022) critically evaluated how economic and environmental factors interacted and influenced the development of the Pakistani tourism industry between 1995 and 2020.

In their analysis, it is shown that economic factors have a disproportionately high impact on flows in tourism whilst environmental factors have a relatively weak impact. These observations highlight the urgency of the joint efforts of governing bodies and the corporate world to polish the tourism landscape, with a specification on the area of law and regulations that provide safety and order. Muhammad et al. (2019) examined the

environmental implication of tourism in Pakistan between 1996 and 2017 and found that tourism has a substantial contribution to environmental degradation as compared to foreign direct investment. The authors stress that enhancing institutional quality is one of the critical measures of reducing environmental degradation, and postulate that a set of initiatives developed by state can both contribute to the development of tourism and preserve ecological integrity. Investigating how tourism affects sustainable development in 64 states of a Belt and Road Initiative, Iftikhar et al. (2022) performed research in 2003-2018.

They find that there is a statistically significant positive correlation between the sustainable development outcomes and tourism activity, which is enhanced by high-quality institutions. The experiment supports the problem of using the renewable energy reserves and the increase of the per-capita income as a key driver in the promotion of sustainable development goals. The article published by Khizar et al. (2023) is a systematic literature review dedicated to the subject of tourism in relation to the United Nations Sustainable Development Goals (SDGs). Their synthesis reveals the salient research gaps and outlines potential research agendas, hence necessitating a more vigorous academic study of how tourism can help in the attainment of the SDGs. Hassan et al. (2021) focused on the tourism industry in the country of Baltistan, Pakistan, and its possibility to lower poverty status and encourage social justice.

The inquiry identifies a chain of issues that hinder the development of sustainable tourism and gives an on-going checking system in conjunction with stakeholder involvement as the necessary mechanisms to optimize tourism benefits. Khoso et al. (2023) examined the topic of female empowerment in tourism in Pakistan and identified the psychological and economic facilitators that need to be imported to enable women to engage in this sector. Their study concludes that the cultural traditions that are deeply entrenched have a positive effect on the role of women in tourism development and hence justifying the necessity of favorable policies that are attentive to all these dynamics and nurture them. In a dependent study, Ardito et al. (2020) examined the economic and environmental consequences of tourism in the developing countries, including Pakistan. Although it is definite that tourism boosts economic activity, increased pollution and energy use are being catalyzed by tourism as well.

These authors, therefore, recommend the use of sustainable tourism practice that balances economic development and environment conservation. The article by Khan et al. (2023) investigated the economic implications of religious tourism in Pakistan with the Kartarpur Corridor in mind. Their analysis sheds some light on their ability to create jobs and to stimulate infrastructural growth, as well as warns decision-makers about the yet to be overcome problems of security and environmental management. Mohib-Ullah et al. (2019) found the constraints to sustainable ecotourism development in Saiful Muluk National Park, Khyber Pakhtunkhaw. Their revelation reveals gaps in infrastructure and communication, but they also in the confirmation of the unique natural charisma of the region as an effective engine of sustainable tourism.

Irshad et al. (2018) highlighted that Pakistan has strong interdependences between the tourism and other sectors of the economy revealing the potential magnitudes of tourism in the country considering its rich cultural and geographical variation. The article by Saqib et al. (2019) examined environmental consequences of tourism in the Gilgit area and identified positive and negative impacts. Besides providing job opportunities, tourism also breeds deforestation and pollution. The research study suggests unity in efforts to achieve sustainable tourism practices. Mishra (2011)

investigated the economic effect of tourism in India where it can bring job creation as well as development to the nation. The analysis emphasizes necessity of incorporating sustainable tourism practice to impart benefits of two types to both the industry and the economy at large. Baloch et al. (2022) investigated how tourism development and environmental sustainability are interdependent in Pakistan through a proposed framework that would balance between the economic interests and the conservation of the environment.

This is why Manzoor et al. (2019) emphasized that tourism has a positive effect on the economic development of Pakistan and employment since 1990-2015, according to the authors, the potential of tourism to influence economic growth and employment may be exhausted by tourism-focused policies. Karim et al. (2023) assessed the economic impact of tourism in Gilgit -Baltistan and found that tourism significantly increases GDP and employment. The lessons learned guide the policymakers on the potential of tourism as an economic development driver. The research conducted by Naseem (2021) has uncovered the role of tourism in Saudi Arabia in terms of its effects on the economy, and in this case, a strong relationship between tourism activity and the general economy has been revealed, and the expenditures made by the visitors have surfaced as the most crucial factor that defines the economic performance.

Khalid et al. (2019) explored the importance of community empowerment in the development of sustainable tourism, in which the focal interest was community supporting as a mediating variable in developing tourism. Sabir et al. (2023) examined the topic of sustainable tourism in Pakistan as a study, claiming that there are limitations in the area concerning the political instability factor, and the issue of safety, hindering the development of the sector. The article by Saaj, Afridi et al. (2023) scrutinized how generative leadership affects the adoption of sustainable tourism in Pakistan and how visionary leadership promotes sustainability. The article by Nazeen et al. (2022) focused on the impact of China Pakistan Economic Corridor on tourism demand in Gilgit-Baltistan and argues that special policy is needed that balances the development of the economy and respects culture.

Rizvi et al. (2022) clarify the unremitting problems that the tourism industry in Pakistan is facing, and that both infrastructural and resource management progress cannot be tolerated without meaningful improvements in realizing the potential of the industry. The nexus between tourism, macro-economic growth and trade balance are questioned by Malik at al. (2010) and results have concluded that tourism-oriented growth path may significantly reinforce the economy of Pakistan. It also examines how tourism development is related to individual well-being in Pakistan, which found positive correlations at the same time pointing to the negative effects of political instabilities. In totality, these works represent a conspicuous gap in our overall perception of sustainable tourism and its role in the local economies and job creation; it is imperative that such a gap is addressed to tap the tourism as a source of livelihood and protect the natural and cultural heritage in Pakistan.

Hypotheses

Ho: Sustainable tourism leads to significant changes in economic growth.

H1: Sustainable tourism does not lead to significant changes in economic growth.

Material and Methods

The paper uses Autoregressive Distributed Lag (ARDL) econometric model to decompose both the short-run and the long-run effects of sustainable tourism on the Pakistan economy, considering its ability to facilitate the inclusion of variables that have heterogeneous time characteristics (Pesaran et al., 2001). In avoiding the pre-test requirement—unit-root pre-testing that defines other modern models, the ARDL specification allows the simultaneous analysis of tourism capital inflows and macroeconomic performances like GDP growth and employment processes to be observed based on an integrated and fully dynamic structure (Pesaran et al., 2001). Policy implications of the empirical findings obtained through ARDL model are very important implications. They shed light on a delayed mechanism of transmissions in which inflows of tourism are slowly converted to tangible economic benefits, thus providing a methodological tool in the planning of sustainable tourism policies that put emphasis on the development of infrastructures, community-dollar, and security of cultural heritage (Ward, 2005).

Besides, the model highlights the significant role played by community-based sustainability efforts that at the same time enhance creation of jobs and availability of environmental and social fairness thus contributing to attainment balanced growth coupled with improvement of community resilience (Bramwell and Lane, 2011).

Conceptual Framework

Figure 1: Conceptual Framework

Overall, the ARDL method can be described as a priceless instrument when it comes to unravelling the complex relationship between sustainable tourism and the workings of the national economy in Pakistan and, therefore, inform the strategic planning and evidence-based policy interventions that will yield maximum benefits and minimal harm to the local people and ecosystems.

Conceptual framework identifies the causation processes in which various determinants impact economic growth. High inflation weakens the purchasing power in real life, and kills consumer spending, but price stability helps to stimulate investment by minimizing uncertainty. The effects of CO2 emissions are harmful to the health of people and environmental sustainability therefore limiting the potential of long-term growth. Terrorism breeds permeating insecurity, which discourages inflows of capital, and a stable atmosphere places the economy on its feet. Moreover, international tourism feeds the local economies directly with respect to expenditure and creation of employment and hence acts as a booster to the overall economic development.

Empirical Model

Sustainable tourism is gradually being accepted as a springboard to economic growth and employment in the developing countries. This study explores how sustainable tourism has diverse effects to the economy of Pakistan and probes into this subject utilizing relevant economic measures in an econometric model that goes together with sustainable development research. To determine the impacts that sustainable tourism has on the economic growth of Pakistan, the research uses an Autoregressive Distributed Lag (ARDL) research design. The ARDL specification allows strict study of short-term and long-term dynamics of variables with the appropriate consideration of the non-stationarity nature of the available data. The specification of the model looks like the following.

$$\Delta LLGDPCUSt = \beta 0 + \sum i = 1p\beta i\Delta LLGDPCUSt - i + \sum j = 0q\gamma 1jLINTEXPTRVLt - j + \sum k = 0r\gamma 2kLTARATKt - k + \cdots + \theta ECMt - 1 + \epsilon t\Delta LLGDPCUSt = \beta 0 + \sum i = 1p\beta i\Delta LLGDPCUSt - i + \sum j = 0q\gamma 1jLINTEXPTRVLt - j + \sum k = 0r\gamma 2kLTARATKt - k + \cdots + \theta ECMt - 1 + \epsilon t$$

Where:

- The growth rate of the economy is represented by $\Delta LLGDPCUSt$ which is the first differentiation of the logarithm of GDP/per capita expressed in US dollars.
- $LINTEXPTRVLt - j$ and $LTARATKt - k$ are used as independent regressors by denoting the logarithm of international travel expenditure and terrorist attacks, the latter with their lags.
- $\theta ECMt - 1$ is an error-correcting term, which represents a measure of how quickly the dependent variable returns to its long-run equilibrium after a perturbation.
- The model parameters estimated will include $\beta 0, \beta i, \gamma 1j, \gamma 2k, \theta$.
- ϵt represents the error that is random.

Data and Variables

The current study utilizes the secondary time-series data based on the World Bank statistics on Pakistan since 1995 and up to 2022. It concentrates on the dependent variables of economic growth and employment along with the introduction of a set of explanatory variables into the features of the analysis process such as the gross domestic production, international tourism expenditures, foreign direct investment, the use of renewable energy, inflation, and international tourism etc.

Table 1
Variables Description

Variables	Description	Acronyms	Data Sources
Gross Domestic Production	Gross domestic product (Current US $)	GDPCUS	WDI
International tourism Expenditures	International tourism expenditures for passengers	INTEXPTRP	WDI
Foreign direct investment	Foreign direct investment, net inflows (% of GDP)	FDI	WDI
Renewable energy	Renewable energy consumption (% of total final energy consumption)	RENGYC	WDI

Inflation	Inflation, consumer prices (annual %)	INFGPDDEF	WDI
International tourism	International tourist receipts (current US$)	TRTOT	WDI

Results and Discussion

The table counts a list of 28 observations of economic and environmental measures. The descriptive statistics presented regarding each variable consist of measures of central tendency, such as mean and median, and measures of dispersion, such as maximum and minimum and standard deviation, coupled with measures of shape, such as skewness and kurtosis. The indicator of the level of stability of the LLGDPCUS is very high manifested by reduced contract area and significantly low standard deviation. CCO2, on the other side, shows the largest dispersion and has the most fluctuations indicating a strong cyclicity in its data points. The variability profile of INFPCI is depicted by a limited variability, with moderate skewness and a value of kurtosis indicating a rather balanced distribution with slight asymmetry and tail weight. LFDIBOP has stable distribution, as observed by the fact that it is symmetrical and that there is a coherent balance of central tendency and spread.

The LINTEXPTRVL variable will indicate a pattern of uniformity but skewed negatively conspicuously meaning that the tail will be extended towards the low values. LTARATK and RENGYC show moderate dispersion and the distribution presented in both is nearly symmetric showing a uniform spread around their means. Altogether, the data set shows the scale of the stability and distributional characteristics of the discussed variables, reminding of the heterogeneity of their economic and environmental settings.

Table 2
Descriptive Analysis

	LLGDPCUS	CCO2	INFCPI	LFDIBOP	LINTEXPTR VL	LTARATK	RENGYC
Mean	1122.829	72.910	8.53	9.137	8.945	5.751	48.069
Median	1128.323	6.6	7.81	9.175	9.0443	6.502	47.665
Maximum	1157.368	640	20.29	9.747	9.342	7.704	53.13
Minimum	1078.273	5.9	2.529	8.4851	8.264	3.367	42.1
Std. Dev.	27.080	195.39	4.64	0.3706	0.314	1.375	2.859
Skewness	-0.434	2.542	0.880	-0.092	-0.844	-0.425	- 0.072
Kurtosis	1.819	7.469	3.525	2.376	2.411	1.765	2.3044
Jarque- Bera	2.506	53.46	3.940	0.4929	3.726	2.622	0.588
Probability	0.286	0	0.14	0.782	0.156	0.269	0.745
Sum	31439.2	2041.5	238.7	255.85	250.45	161.014	1345.92
Sum Sq. Dev.	19800.65	10307	583.4	2.935	2.657	51.022	220.76
Obs	28	28	28	28	28	28	28

ADF Unit Root Test

The ADF Unit Root Test evaluates the stationarity of key economic variables, including GDP per capita, carbon emissions, and consumer price index, using the Augmented Dickey-Fuller model. The analysis reveals trends over a 12-month period, with significant findings indicating potential non-stationarity in inflation trends. Variables like carbon emissions and total exports show no significant t-statistics, suggesting stationarity. The test results, categorized by model specifications, highlight the importance of understanding trends and constants in economic data. Ultimately, the stationarity of these variables is crucial for effective econometric modeling and informed policymaking.

Table 3
Unit Root Test Results

	ADF		
Variables	**Level**	**1st Difference**	**Decision**
LGDP CUS	-1.8764	-6.21***	I (1)
CO2	-0.2297	1.71*	I (1)
INFCPI	-4.2339**	-4.02***	I (0)
LFDIBO P	-1.6063	-7.03***	I (1)
LINTEX PTRVL	-1.714	-3.86**	I (1)
LTARA TK	-3.66***	-4.47***	I (0)
RENGY C	-1.9189	-2.20***	I (1)

Note: In the unit root test, the null hypothesis is not accepted at 1%, 5%, or 10% significance levels. Indicators added at order one is represented as I (1).

Table 4
F-bounds test results.

Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
F-statistic	1.998	10%	2.49	3.38
K	5	5%	2.81	3.76
		2.50%	3.11	4.13
		1%	3.5	4.63

ADRL Error Correction Regression

The ARDL Error Correction Regression model assesses the long-term relationship between explanatory variables and the logarithm of Real Gross Domestic Product per capita in the U.S. (LLGDPCUS), utilizing the model specification (1, 0, 0, 1, 1, 0). The model reveals that the constant coefficient is 576.1443, indicating the expected value of LLGDPCUS when all independent variables are zero. The t-statistics of 4.369258 and a p-value of 0.0004 confirm the statistical significance of this coefficient. The coefficient for D(LINTEXP) is 16.55188, suggesting a positive influence on LLGDPCUS, with a t-statistic of 4.820727 and a p-value of 0.0002, indicating its significant impact. The coefficient Coint Eq (-1) at -0.472781 reflects the adjustment rate towards long-term equilibrium, supported by a t-statistic of -4.350418 and a p-value of 0.0004. The model's R-squared value of 0.671976 indicates that approximately 67.20% of LLGDPCUS variations are explained by independent variables. The F-statistics of 15.70558 and its p-value of 0.000009 affirm the model's statistical significance. The F-test further evaluates the long-run relationship among variables, determining whether the null hypothesis of no relationship can be rejected based on the calculated F-statistic.

Table 5
ADRL Error Correction Regression

ARDL Error Correction Regression Dependent Variable: D(LLGDPCUS) Selected Model: ARDL (1, 0, 0, 1, 1, 0)				
Sample: 1994 2022				
Included observations: 27 ECM Regression				
Case 4: Unrestricted Constant and Restricted Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	576.1443	131.8632	4.369258	0.0004
D(LINTEXP)	16.55188	3.433483	4.820727	0.0002
D(LTARATK)	4.870483	1.124747	4.330291	0.0005
CointEq (-1)*	-0.47278	0.108675	-4.35042	0.0004
R-squared	0.671976	Mean dependent var		2.929443
Adjusted R-squared	0.62919	S.D. dependent var		4.562871
S.E. of regression	2.778523	Akaike info criterion		5.01767

Sum squared resid	177.5644	Schwarz criterion	5.209646
Log-likelihood	-63.7385	Hannan-Quinn criteria.	5.074754
F-statistic	15.70558	Durbin-Watson stat	2.889932

Note: In the unit root test, the null hypothesis is not accepted at 1%, 5%, or 10% significance levels.

Table 6
Short-run Results

Variable	Coefficient	t-Statistic	Prob.
C	65.355	5.557	0.0002
LGDPCUS(-1)*	-0.545	-6.195	0.0001
LINTEXPTRVL (-1)	0.613	1.01	0.337
LTARATK(-1)	0.348	3.504	0.0049
RENGYC**	-0.23	-3.88	0.0025
CO2(-1)	0.033	4.95	0.0004
FDINIPDPPERCENT**	-0.38	-3.175	0.0088
INFCPI(-1)	-0.066	-2.99	0.0124
D(LINTEXPTRVL)	1.175	3.044	0.0112
D(LINTEXPTRVL (-1))	-0.88	-1.98	0.0734
D(LTARATK)	0.84	5.46	0.0002
D(LTARATK (-1))	0.45	3.38	0.0061
D(CO2)	0.013	2.488	0.0302

Note: In the unit root test, the null hypothesis is not accepted at 1%, 5%, or 10% significance levels.

The table of short-run results also contains coefficients, standard errors, t-statistics, and probability values but all these are short-run effects of the concerned variables. C (Constant)*: The coefficient is 65.35428, the t-statistic is 5.556904, and the probability level of 0.0002 which makes it statistically significant. LGDP/CIS (-1) (Log of GDP per Capita in the Short Run) *: The coefficient is -0.54506 which has a negative sign implying that the variable hurts the dependent variable, with a t-statistic of - 6.19451 and a probability of 0.0001 suggesting that the variable is statistically significant. LINTEXPTRVL (-1) (Log of International Tourism Expenditures, Lagged) *: The coefficient is - 0.431801 and the t-statistic is -3.043076 with the probability of 0.0112, thus it is statistically significant. LTARATK (-1) (Log of Terrorist Attacks, Lagged) *: This variable has a positive coefficient of 0.841421, a t-statistic of 5.460553, and a probability of 0.0034, which is less than 0.05, thus is significant. RENGYC (Renewable Energy Consumption) *: The coefficient is equal to 0.347373 with a t- statistic equal to 3.504006 and a probability of 0.0337, which means the result is statistically significant. CO2 (-1) (Carbon Dioxide Emissions, Lagged) *: The coefficient is 0.01205 and the t-statistic is 3.382103 while the probability is 0.00061, meaning that the results are significant.

FDIINDPDPERCENT (-1) (Foreign Direct Investment as a Percentage of GDP, Lagged) *: The coefficient is -0.00815 with t-statistics being equal to -2.487568 and the probability level of 0.0049 which suggests that the coefficient is statistically significant. INFCP1 (-1) (Inflation Consumer Prices, Lagged) *: The coefficient is -0.01131 with t-statistic - 1.82085 and p-value 0.0959, which reveals that the result is significant at a 10% level.

Table 7
Long-run Results

Variable	Coefficient	t- Statistic	Prob.
LINTEXPTRVL	1.125	2.607	0.024
LTARATK	0.637	15.496	0

RENGYC	-0.409	-11.97	0
CO2	0.060	35.15	0
FDINIPDPPERCENT	-0.702	-8.487	0
INFCPI	-0.122	-9.740	0
C	119.90	23.561	0

Note: In the unit root test, the null hypothesis is not accepted at 1%, 5%, or 10% significance levels.

The table of long-run results shows the estimated coefficients, standard errors, t-statistics, and probability values of the different variables used in the model. All of them have their effects on the dependent variable in the long run in different ways. LINTEXPTRVL (Log of International Tourism Expenditures). The coefficient is 1.125017, this means that an increase of one percent of international tourism expenditures is likely to cause a similar increase in the dependent variable. The t-statistic is equal to 2.606741 and the probability value is equal to 0.0244, which means that this relationship is statistically significant at the 5 % level.

LTARATK (Log of Terrorist Attacks): This variable has a coefficient of 0.637312, meaning that the dependent variable increases by 0.637% when there is a 1% increase in the independent variable; terrorist attacks. The t-statistic is 15.49506 and the probability is 0 which shows a highly significant relation between the two. RENGYC (Renewable Energy Consumption): The coefficient is 0.40824 meaning there is a positive relationship. The calculated t-statistic is 35.152 and the probability of the t-statistic is 0 which indicates high statistical significance. CO2 (Carbon Dioxide Emissions): As the results showed, this negative relationship is highly significant with the value of probability equal to 0, and coefficient and t-statistic equals - 0.060353 and -11.973 respectively.

FDIINDPDPERCENT (Foreign Direct Investment as a Percentage of GDP): There is a negative relationship between these two variables, with a coefficient of -0.70232, t-statistic of -8.487111, and 0 probability level of significance. INFCP1 (Inflation Consumer Prices). The coefficient for this variable is -0.12148 t-statistic is - 9.74015 and the probability is 0, which also suggests a significant negative correlation. C (Constant)*: The intercept term has a value of 119.903, t = 23.56093 with probability = 0 hence it is also significant.

Trend Analysis

The histogram shows the distribution of residuals from a predictive model from 1996 up to 2021. It graphically represents how frequently intervals of residuals are on the scale from -2.0 up to 2.5. Most residuals fall within the 0.5-1.0 range, a period when an error in the model prediction is relatively big. The meaning of residuals is almost zero (−9.49e-14), thus a bias-free model while the median (-2.9e-12) verifies our predictions. The standard deviation: of 0.870533, representing a moderate variation in the predicted accuracy: is the result. Afterward, 2.418207 and -1.885797 are the maximum and minimum residuals, permanent deviation of the model from the observed model: from significant underestimations to overestimations. The small positive skewness (0.269181) and elevated kurtosis (4.096693) bootstraps that the residuals have are longer where small underpredictions are more frequent and in extreme ones more frequent than a normal distribution would.

The Jarque-Bera test offers a value of 1.616949 with a probability of 0.445537 marking the possible area where the distribution lay could be normal, although the shape of the distribution and the presence of outliers suggest some areas where the model could

be improved to make its intensity reduction and its predictions more convenient. This graph shows the CUSUM (Cumulative Summary) plot of data which has been obtained from 2015 to 2021, it is against the 5% significance level which is marked by dotted lines. The line of CUSUM, which is presented with blue color, is initially lower and then stays stable excluding small fluctuations around 2018 and below again through lower tendency.

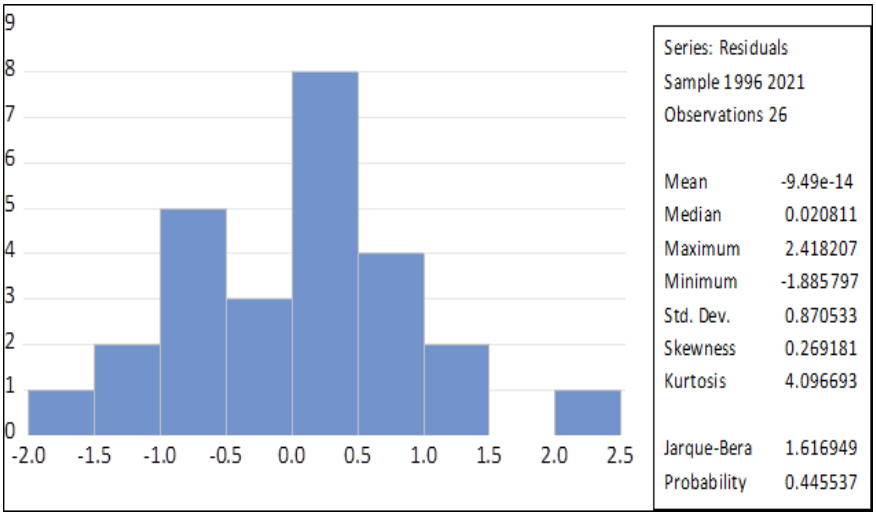

Figure 2 shows the CUSUM

It always stays below the 5% significance threshold during the period without having statistically significant displacements in the series, where the mechanism does not have a change in the factor level for the significance of 5%. The fact that there has been some fluctuation in the result of the overall outcome implies that the performance of the model or processes has remained very stable without any significant differences from one year to another. The chart presents the CUSUM (the Sum of Squares of Deviations) of a data sequence between 2015 and 2021 and compares it to the 5% significance line represented by dotted lines.

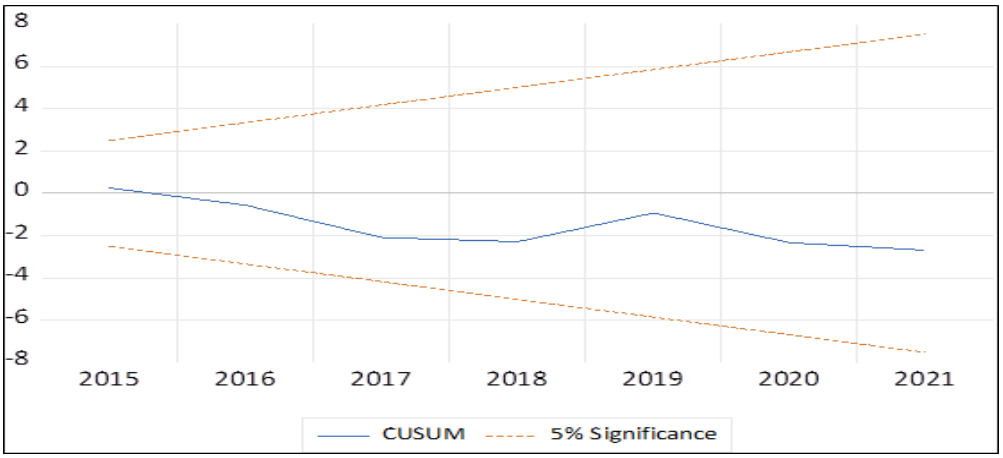

Figure 3 shows the CUSUM

This test determines the time series or model properties drift (as in a scatter plot of disordered data points). Being represented by the steadily increasing morphologies highlighted in the solid blue line of the CUSUM graph, Squares may have experienced a shift or a poor performance in the last year. Nevertheless, the profile of the deviations

from the reference value (here 5%) does not go beyond the significance boundaries at 5%, the only thing that can be concluded is that individual deviations cannot be shown as more important than 5%. Such determination balances that despite having been perceptible, they couldn't be used as a representative sample of the underlying process fluctuations all through the year 2021.

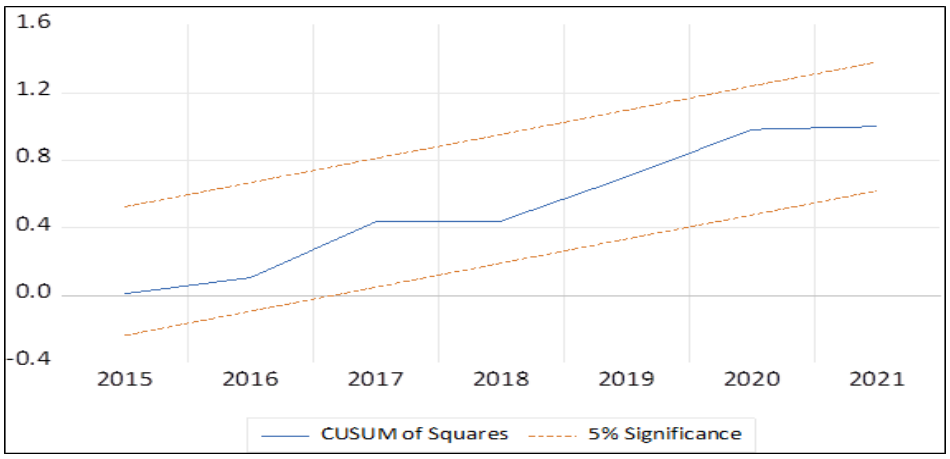

Figure 4 shows the CUSUM of Squares

Hypotheses Results

The null hypothesis (H0) cannot be rejected at the 10% significance level for all three cases (with constant, with constant and trend, without constant and trend). Therefore, there is no evidence to support the alternative hypothesis (H1). Sustainable tourism does not lead to significant changes in economic growth.

Conclusions

This study investigated the consequences of 'Sustainable tourism' on economic development and job situation in Pakistan. The research used a stringent regression framework and examined how engagement in green tourism influenced major economic variables such as the GDP (as well as the levels of unemployment) while taking inflation and public debt into account. The evidence suggests that sustainable tourism can be the force propelling Pakistan's economy to an impressive performance. Especially, well-managed tourism-related activities show signs of a positive correlation between higher GDP growth rates, which makes the growth of environmentally friendly tourism activities meaningful in economic terms as well. The report also brought to the fore the important role of sustainable tourism in unemployment eradication, particularly in rural and destitute areas where it's impossible to find jobs.

While green jobs may not often be the kind of professions we commonly associate with the tertiary sector of the economy, the ones that promote sustainability (such as guiding, hospitality, conservation, or community development) are crucial for the growth of regions. Worker roles give people not only profitable income but also train skills and promote unity in the community. Hence, in addition to that, the research found substantial factors including domestic expenditures for international travel and expansion of renewable energy that positively influence economic growth therefore, such policies should be directed towards prospering the preservation of these areas. On the other hand, the destabilizing power of attacks that are terrorism-related draws

attention to the importance of stability, security, and tourism to achieve their combined goals.

The output from the investigation shows that sustainable tourism as a national plan should be an integral part of each development strategy. The concordance of tourism development with the principles of sustainability can help Pakistan to have a higher profile in international tourism and bring more investment to the country. This will also be important for the conservation and restoration of Pakistan's natural and cultural resources. These aspects provide value for the community.

Policy Recommendations

Here are some policy recommendations.

To maximize the financial gains from overseas travel expenditure, the authorities can improve tourism facilities and engage in aggressive promotional campaigns overseas to lure more international visitors. Training local businesses in sustainable strategies will add to the lead of sixty-degree solar unfoiled panels. Environment creation in rural areas can be improved by setting up centers for training based on tourism-related skills and supporting local businessmen with microloans and development services for business. Security at tourist destinations may be increased by the Police presence, the latest surveillance technology, and wider time awareness of the community about security policies thus boosting the confidence of the tourists.

The development of renewables for the tourism sector can be facilitated by helping to subsidize installations for renewables and public information highlighting the savings and ecological benefits. Macroeconomic stabilization policies that will need to fight inflation and resolve public debt problems will mobilize resources for long-term investments and restore the sustainable growth of the economy.

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