

Post-Pandemic recovery measures and role of HEI's to ensure socio-economic sustainability through FDI in Smart tourism

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ABSTRACT

Tourism is one of the major source of revenue for most of the countries and it is recognised under the service sector. This study calls for the adoption of the new normal tourism business strategies in the island nations and mainland destinations which are more vulnerable to the pandemic situations. Due to the Covid-19 pandemic the socio economic sustainability in many countries that receives revenue from tourism are shaken. According to the United Nations World Tourism Organization (UNWTO), tourist arrivals are estimated to have fallen 74 percent in 2020 compared to 2019 and the efforts towards recovery could achieve very little in economic fronts. Sri Lanka has seen a worst financial crisis due to the, pandemic and its negative effects on its tourism sector. Sensitising the countries to think of technology integration in tourism through Foreign Direct Investment (FDI) to ensure socio economic stability and sustainability is the need of the hour. For the current study, the annual data of World Bank for the period from 1979- 2020 has been considered for analysis. ARDL model is used as it simplifies the long run causation by presenting the cointegration value and the short-run causation by presenting the Error correction term. Additionally, to find out directional causality in the short run, Granger causality is performed. The causal effects of Per capita Growth rate and Foreign exchange earnings from inbound tourism for five countries (China, India, Sri Lanka, Singapore (Asia) and Spain (Europe)) has been found along with the causal effect of FDI and Per capita Growth rate to arrive at the results for propagating the necessary policy implications for sustainable and stable tourism business. The results of the causal analysis recommends the need for FDI to encourage smart tourism and to ensure socio economic sustainability in future. The study also recommends the governing bodies of the education sector to strongly suggest structured curriculum that can nurture sustainable businesses to support sustainable tourism and realisation of other UN's Sustainable development goals.

Keywords: Tourism, Socio economic sustainability, Virtual tourism, Smart tourism, Per Capita Growth Rate, Foreign exchange earnings from inbound tourism, Granger Causality, Technology Integration for sustainable Tourism, Foreign Direct Investment (FDI), Curriculum design.

1 Introduction

People have been visiting several destinations to spend their leisure days seeking delight and recreation in serene environment. As predicted by Day, B., Burnice McKay, R., Ishman, M. and Chung, E. (2004), it happened again (COVID-19 pandemic) after previous SARS outbreaks, but this time it is shaking the entire world questioning the socio economic stability of many countries of the world especially those relying on revenues from tourism sector. What SARS taught businesses about crisis management is not enough to face the, Covid-19 and its further mutations. To give healthy vacations by disconnecting the employees from iphones, twitter, androids, facebook and other devices on their person 24 X 7 the companies give paid vacation days as wellness measures once or twice a year based on its HR policies. The company employees going on commercial business trips, paid vacations, the students who travel in view of higher education and also family trips planned during vacation seasons contributes a greater share of revenue to the tourism sector. Covid-19 outbreak has drastically affected these categories of the travellers and has made them cancel most of their trips in their business, educational, routine and luxury travel agenda. According to the Statistics Mauritius (2021), arrival of tourists to Mauritius decreased by 77.7% in 2020 compared to 2019. The revenue decreased by 72% in 2020 compared to the same seasons in 2019. It is high time these tourism destinations seek knowledge to transform their business strategies into novel trends like Staycation, Wellness and Spa Tourism, Virtual Tourism, Ecotourism or Eco Travel, Green Travel and Sustainable Tourism through technology integration to ensure the socio economic sustainability of the destination areas.

With Covid-19 striking waves after waves, affecting the normal travel trends, the businesses across the world are hit hard giving way for higher rate of inflation, unemployment and economic instability. Even

in developed countries that are trying to achieve 100% vaccination, crisis related to logistics, domestic and foreign travel are affected to the core. People in all walks of life are finding alternatives with the help of technology to meet, greet, work, engage and do business. Hybrid meetings and blended learning along with virtual visits have made businesses achieve the target to a certain extent although not 100%. But there is always a missing out feeling among the people when it comes to socialising in a common physical destination which is still valued to be a strong bond establishing opportunity while working as team and when it comes to families those valuing the time of all the family members. In this study attempt has been made to identify the impact of pandemic on the socio economic development/stability of the countries where tourism sector contributes majorly to the GDP and growth. Based on the analysis, suggestions have been made to these countries to attract investment from abroad (Inward FDI) to achieve socio economic growth and sustainability.

2 Review of Literature

To ensure the socio economic stability and sustainability in the countries depending on the tourism sector and to catalyse the recovery measures to improve the socio economic sustainability, investment in technology infrastructure is a must. One of the best ways to attract investment is through foreign direct investment (FDI). The review of the following studies are done to understand the global trends in growth and the contribution of FDI in sustaining the growth. Foreign direct investment helps an economy to grow that will ultimately affect per capita growth of an economy to prosper, (Nunnenkamp, 2004). FDI, along with increasing per capita growth enhances sectoral growth. Where there is infrastructural advancement with respect to tourism sector, there will be tourism sector growth eventually, (Khan, et al. , 2020)

2.1 Per capita growth rate, Foreign exchange earnings from inbound tourism and FDI

Many countries regard tourism as a potentially promising and capable way for economic development, Dimitrie Cantemir (2015). Using system GMM estimates, Hubert G. Scarlett (2021) found a statistically significant positive effect of tourism on economic growth. He also added that increased tourist receipts have positive effects on growth at all levels, which in turn is found to have a positive impact on mobilising FDI. Brinda Sooreea-Bheemul and Rajeev Sooreea (2012) studied the role of Foreign Direct Investment (FDI) in the 'Mauritian economic miracle' years of 1970-2000. The investigators analysed the impact of spillover and linkage effects between FDI, productivity, domestic investment and exports on economic growth. Zoran Ivanovic (2011) studied the influence of foreign direct investment on tourism in Croatia. Narmadha, V., & Anuradha, A. (2021) investigated the socioeconomic, cultural and environmental impact of covid-19 on tourism in India post pandemic and found a drastic fall in the contribution of tourism sector to the country's growth.

Apergis and Payne (2012) found a bidirectional relationship between tourism and economic growth in both the short and long run in a panel of nine Caribbean countries. They pointed out the interconnectedness between the tourism and economic growth that acts as the catalysts for the inflow of foreign exchange earnings and the production process in the Caribbean economy. Partt (2015) showed how tourism can generate more economic activity by stimulating consumption and investment. He used the input-output, linkage analysis and CGE model to study seven Small Island Developing States (SIDS). He also showed the evidence of impact of reduction in investment in tourism industry on decline in manufacturing and agricultural sectors.

Aluculesei, Alina-Cerasela (2017) explored the recent evolutions of the tourism and hospitality industry's FDI. Henri Bezuidenhout and Sonja Grater (2016) studied the dimensions of FDI in the tourism Sector in Africa by discussing on FDI policy formulation by African governments. They also studied the Investment Promotion Strategies, Investment Incentives and Bilateral Investment Agreements between home and host countries as well as their respective Investment Promotion Agencies. The findings also help the industry to understand the untapped potential for tourism FDI in Africa.

Nikšić Radić, et al (2019) employed Granger causality test in a vector autoregressive model (VAR model), the analysis of variance decomposition and the impulse response function within the panel setting, to examine the causal link between terrorism and FDI in tourism. Sheereen Fauzel (2021), used a panel vector error correction model (PVECM), to study the impact of foreign direct investment (FDI) on

tourism development in a selected group of 17 small island economies during 1995-2018. The results confirm that FDI has been an important ingredient in the tourism development of the island economies in the long run. The bidirectional causality between FDI and tourism development was validated which showed a long run, positive and direct relationship between foreign investment and tourists' arrivals.

Yixing Yang, et.al.,(2021) explored the association between the institutional quality, tourism, and FDI in BIMSTEC nations for the period 1996Q1–2018Q4. The investigators used the econometric models such as Panel ARDL, Nonlinear ARDL, and Toda-Yamamoto causality test, with symmetric and asymmetric effects of institutional quality and tourism. The findings of the study revealed an asymmetric relationship between institutional quality, tourism, and FDI, both in the long-run and short-run.

Kashif Munir and Mehwish Iftikhar(2021) in their study analysed the long and short-run linear and nonlinear impact of foreign direct investment (FDI) and exchange rate on tourism in South Asian countries. They used the annual panel data of five South Asian countries that included Bangladesh, India, Nepal, Pakistan, and Sri Lanka from 1995 to 2019. ARDL and NARDL methodology were used for the study. The findings of the study explained that an increase in FDI and appreciation of exchange rate contracts tourism, while a decrease in FDI and depreciation of exchange rate expands tourism in the long run. They recommended the need to expand tourism sector through attracting FDI in tourism sector.

M Tamizharasan(2019) investigated the impact of Foreign Direct Investment on the Hotel and Tourism sector for sustainable development in the Indian economy. The study showed an overall growth in the domestic, foreign tourist visits, foreign exchange earnings and FDI in the hotel and tourism sector. The study found a linear trend in FDI and a positive relationship between domestic, foreign tourist visits, foreign exchange earnings, GDP and FDI in the hotel and tourism sector in the Indian economy. Rios-Morales et.al (2011) suggested the formulation and implementation of sound policies, together with regulations to promote the private sector in attracting tourism investment and economic growth.

Orindaru A, et.al.,(2021) Investigated the tourism industry in a Post-COVID-19 Era and contemplated about the sustainable Strategies for its recovery. They found Hygiene and health conditions in the host destination as an essential factor in making travel decisions. V Narmadha and A Anuradha(2022) studied the paradigm Change in the preferences of tourists towards the upcoming trends in new normal tourism. They examined the changing trends towards responsible tourism and sustainable businesses in the Post-COVID-19 Era. Tecel, Ayhan ,et.al.,(2020) studied the causal interactions among tourism, foreign direct investment, domestic credits and economic growth: evidence from selected Mediterranean countries to find no causal relationship between domestic credits and economic growth. But majorly, the Panel Pooled Mean Group Autoregressive Distributed model (PMG-ARDL) estimations done by the investigators suggested a positively significant relationships between tourism and economic growth both in short-term, and long-term periods.

The review of the above literature reveals the nexus between Per capita Growth rate, Foreign exchange earnings from inbound tourism and FDI. The island nations have so far been on the spotlight in this area of research and the investigators have found a greater need for similar research in inland destinations also, in order to support sustainability, which is identified as the current research gap.

2.2 Application of Technology for sustainable destination development

The application of technology in tourism industry is gaining its momentum during the current pandemic. Many under explored areas in research in tourism specifically the exploitation of the ICT in tourism has to be given a complete focus to review the tourism industry which has seen a drastic downward trend since the outbreak of the pandemic in 2019. Suitable and responsible tourism can be achieved by exploiting the ICT and by enabling the technology integration in the tourism sector.

Use of ICT seems to bring a greater change within the tourism industry (Buhalis and Law, 2008). A. Ali and A.J. Frew(2014) in their study on 'Technology, innovation and application in destination development' ranked the ICT based tools and applications for sustainable tourism. They have listed the ICT tools and application as computer simulation, Virtual tourism, Location based services, Geographical Information systems, Carbon calculations, Global positioning system, Environment management information system, Destination management system, Community informatics and Intelligent transport system. Gretzel U, et.al.,(2015) looked at the future of sustainable tourism

destination as the place where there is smart tourism ecosystem that breeds new business models and interaction paradigms among the tourists.

Buhalis and Amaranggana(2014), state that sustainable tourism destinations can be strengthened by implementing apps that integrate the destination elements and other attractive dimensions. Cloud computing services, IOT and the end-user internet service systems are the prominent support technologies used in enhancing the tourism industry. Sanjay Lama, et.al.,(2019) explored the implication of the factors affecting e-tourism adoption in developing countries, with respect to Nepal. The investigators found that factors namely national infrastructure, market size, awareness of e-tourism, ICT resources, value proposition and support from top management to influence the e-tourism adoption in small and medium tourism enterprises in Nepal.

Tonino Pencarelli(2020) described the digital revolution in the travel and tourism industry. Tyan, I., (2021) opine that blockchain technology could provide an excellent opportunity to create cryptocurrency-based rewarding system to encourage tourists' sustainable behaviour. The tourist would get tokens which they could spend on other goods and services in the host destination. Yan Zhen Heng Tuo, et.al.,(2021) explained, how AI will change the future of tourism industry (practice in China). They proposed a multi dimensional framework involving three aspects namely level of intelligence, task types and robots embedded with AI, to describe the change in future tourism. They also highlighted the importance of privacy, prejudice and ethics in implementing AI in tourism in the future.

Piera Buoincontri and Roberto Micera(2016) studied the experience co-creation in smart tourism destinations by analysing the multiple cases of European destinations. Venice and Salzburg, conducted triangulating qualitative methods and reveals that the smart approach adopted by Sustainable Tourism Destinations improves the co-creation of tourism experiences by encouraging the interaction with tourists, increasing their active participation during the experience, and promoting the sharing of the experience among the tourists themselves.

Today, tourists believe in co-creation for better preferred pleasant experience. They try to combine their desired experience from the destination with the resources available in the destination to satisfy their own specific needs for achieving custom experiences. Data sharing through technology can support the co-creation experience in tourism. Many researchers have attempted to study the impact of technology in tourism industry, but there are very few studies pertaining to the latest concept of smart tourism and sustainable development. This current chapter discusses about this area in detail and attempts to suggest measures for recovery of the tourism sector by attracting FDI towards development of technology infrastructure for smart tourism among the small island and inland tourism destinations in order to ensure socio economic stability.

Although the research in this area have been done widely, very few recent studies, (Kashif Munir and Mehwish Iftikhar(2021)) have attempted for Asian countries including China, India and Singapore which are growing at a faster pace, to reveal the picture of the nexus between Per capita Growth rate, Foreign exchange earnings from inbound tourism and FDI. When it comes to technology and tourism, the concept of smart tourism is more viable by attracting FDI in developing technology infrastructure in countries which are more import oriented, relying on tourism revenue. There is a research gap in the area of smart tourism and it is slowly gaining its momentum. Therefore this chapter is motivated by the current pandemic situation and digital transformation to suggest the policy measures towards sustainable economic growth for the countries affected by the pandemic. The researchers strongly believe that the use of technology in tourism or Smart tourism and strongly believe that application of technology can take the tourism sector across the world forward from its setback due to pandemic towards sustainable and responsible tourism. With this agenda the following objectives have been framed for discussion.

3 Objectives of the study:

The two major objectives of the study are

1. To analyse the causal effects of Per capita Growth rate on Foreign exchange earnings from inbound tourism and FDI on Per capita Growth rate (especially countries depending on revenue from tourism)
2. To suggest recovery measures through FDI towards technology integration in tourism post-pandemic in line with the emerging new travel trends.

4 Methodology

Autoregressive Distributed Lag (ARDL) models extend Autoregressive models with lags of explanatory variables. While ARDL models are technically AR-X models, the important difference is that ARDL models focus on the exogenous factors and picking the optimal lag structure from both the endogenous variable and the exogenous variables. ARDL models are also closely related to Vector Autoregressions, and a single ARDL is effectively one row of a VAR. The essential distinction is that an ARDL assumes that the exogenous variables are exogenous in the sense that it is not necessary to include the endogenous variable as a predictor of the exogenous variables.

ARDL model is used as it simplifies the long run causation by presenting the cointegration value and the short-run causation by presenting the Error correction term. The significance of the error correction term lies in its negative value with a significant probability (less than 0.05). Also, the error correction model presents the short-run influence of the independent variable on its dependent variables. Additionally, to find out directional causality in the short run, Granger causality is performed. The causal effects of Per capita Growth rate and Foreign exchange earnings from inbound tourism for five countries (China, India, Sri Lanka, Singapore (Asia) and Spain (most affected by Covid in Europe)) has been found along with the causal effect of FDI and Per capita Growth rate to arrive at the results for propagating the necessary policy implications.

The ARDL equation is expressed as follows:

$$\Delta \ln Y_t = \alpha + \sum_{i=1}^n \beta_i \Delta \ln Y_{t-i} + \sum_{j=0}^n \gamma_j \Delta \ln X_{t-j} + \sum_{k=0}^n \phi_k \Delta \ln Z_{t-k} + \gamma_1 \ln(Y_{t-1}) + \gamma_2 \ln(X_{t-1}) + \gamma_3 \ln(Z_{t-1}) + e_t$$

For the current study, the annual data of World Bank for the period from 1979- 2020 has been considered for analysis.

5 Data Analysis and Interpretation:

5.1 Causal effect of Per capita Growth rate on Foreign exchange earnings from inbound tourism.

Table 1 Causal effect of Per capita Growth rate on Foreign exchange earnings from inbound tourism-CHINA

Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Foreign exchange earnings from inbound tourism (EAR)	Per Capita Growth (PCG)	YES	11%	PCG-EAR

In China, long run cointegration between EAR and PCG is present. It explains that in the long run, earnings from inbound tourism depend on per capita economic growth. In short run phenomenon, there is 11 percent chance for China to move from short run shocks to long run stable equilibrium. Also, in short run, per capita economic growth granger causes foreign exchange earnings from inbound tourism. R-squared value is 0.360270

Table 2 Causal effect of Per capita Growth rate on Foreign exchange earnings from inbound tourism-INDIA

Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Foreign exchange earnings from inbound tourism (EAR)	Per Capita Growth (PCG)	YES	95%	NA

In India, long run cointegration between PCG and EAR is present (7.761461). But, in short run phenomenon, there is positive impact of PCG on EAR. There is 95 percent chance for India to move from short run disequilibrium to long run stable equilibrium. The data are able to explain 62 percent of actual scenario (R square- 0.62). Autocorrelation in the dataset are checked and it is proved that data are free from autocorrelation (Durbin Watson test-2.1)

Table 3 Causal effect of Per capita Growth rate on Foreign exchange earnings from inbound tourism-SRILANKA

Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Foreign exchange earnings from inbound tourism (EAR)	Per Capita Growth (PCG)	NO	5%	PCG-EAR EAR-PCG

In Srilanka, long run cointegration between PCG and EAR is absent. But, in short run phenomenon, there is positive impact of PCG on EAR. There is 5 percent chance to move from short run disequilibrium to long run stable equilibrium. Also, in short run, there is granger causality running from PCG to FDI. The data are able to explain 74 percent of actual scenario (R square- 0.74). Autocorrelation in the dataset are checked and it is proved that data are free from autocorrelation (Durbin Watson test-2)

Table 4 Causal effect of Percapita Growth rate on Foreign exchange earnings from inbound tourism-SINGAPORE

Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Foreign exchange earnings from inbound tourism (EAR)	Per Capita Growth (PCG)	YES	0.5%	NO

In Singapore, long run cointegration between EAR and PCG is present. It explains that in the long run earnings from inbound tourism depend majorly on per capita economic growth. In short run phenomenon, there is 0.5 percent chance for Singapore to move from short run shocks to long run stable equilibrium. Also, in short run, there is no granger causality running between two variables. R-squared value is 0.339128.

Table 5 Causal effect of Percapita Growth rate on Foreign exchange earnings from inbound tourism-SPAIN

Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Foreign exchange earnings from inbound tourism (EAR)	Per Capita Growth (PCG)	YES	82%	NO

In Spain, long run cointegration between EAR and PCG is present which explains that in long run, earnings from inbound tourism depends on the per capita economic growth. In short run phenomenon, there is 82 percent chance for Spain to move from short run shocks to long run stable equilibrium. Also, in short run, there is no granger causality running between two variables. R-squared Value is 0.469952

5.2 Causal effect of FDI on Percapita Growth rate

Table 6 Causal effect of FDI on Percapita Growth rate-CHINA

Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Per capita growth (PCG))	FDI	NO	42.5137 %	PCG-FDI

In China, long run cointegration between PCG and FDI is absent. But, in short run phenomenon, there is positive impact of FDI on economic growth. There is 43 percent chance for China to move from short run disequilibrium to long run stable equilibrium. Also, in short run, there is granger causality running from PCG to FDI. The data are able to explain 45 percent of actual scenario(R square- 0.45). Autocorrelation in the dataset are checked and it is proved that data are free from autocorrelation (Durbin Watson test-1.79)

Table 7 Causal effect of FDI on Percapita Growth rate-INDIA				
Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Per capita growth (PCG))	FDI	YES	83%	PCG-FDI

In India, long run cointegration between PCG and FDI is present. But, in short run phenomenon, there is no impact of FDI on economic growth. There is 83 percent chance for India to move from short run disequilibrium to long run stable equilibrium. Also, in short run, there is granger causality running from PCG to FDI. The data are able to explain 58 percent of actual scenario(R square- 0.58). Autocorrelation in the dataset are checked and it is proved that data are free from autocorrelation (Durbin Watson test-1.88)

Table 8 Causal effect of FDI on Percapita Growth rate-SRILANKA				
Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Per capita growth (PCG))	FDI	YES	67%	NA

In Srilanka, long run cointegration between PCG and FDI is present(3.78). But, in short run phenomenon, there is positive impact of FDI on economic growth. There is 67percentchance to move from short run disequilibrium to long run stable equilibrium. The data are able to explain 34 percent of actual scenario(R square- 0.34). Autocorrelation in the dataset are checked and it is proved that data are free from autocorrelation (Durbin Watson test-1.5)

Table 9 Causal effect of FDI on Percapita Growth rate-SINGAPORE				
Dependent Variable	Independent Variable	Long run Cointegration	Short run Error Correction Term	Granger Causality
Per capita growth (PCG))	FDI	YES	110 % (Spurious)	FDI-PCG

In Singapore, long run cointegration between PCG and FDI is present(5.415564).In short run phenomenon, there is positive impact of FDI on economic growth. There is 110 percentchance to move from short run disequilibrium to long run stable equilibrium (the result is spurious, hence add no value to the analysis). Also, in short run, there is granger causality running from FDI to PCG. The data are able to explain 58 percent of actual scenario(R square- 0.69). Autocorrelation in the dataset are checked and it is proved that data are free from autocorrelation (Durbin Watson test-1.71)

Table 10 Causal effect of FDI on Percapita Growth Rate-SPAIN				
Dependent Variable	Independent	Long run	Short run	Granger

	Variable	Cointegration	Error Correction Term	Causality
Per capita growth (PCG))	FDI	NO	87%	NA

In Spain, long run cointegration between PCG and FDI is absent. And in short run phenomenon, there is positive impact of FDI on economic growth. There is 87 percent chance to move from short run disequilibrium to long run stable equilibrium. The data are able to explain 15 percent of actual scenario (R square- 0.15). Autocorrelation in the dataset are checked and it is proved that data are free from autocorrelation (Durbin Watson test-1.18)

6 Discussion :

Piyali Roy Chowdhury & A Anuradha (2021) in their study on the 'Major determinants of per capita growth rate of India- FDI, inbound tourism and manufacturing sector' discussed the influence of foreign exchange earnings from inbound tourism (EAR), foreign direct investment (FDI) and manufacturing sector value added output (MANU) on per capita economic growth (PCG) for a period of 1996-2018. In the current study the results of the Causal effect of Per capita Growth rate on Foreign exchange earnings from inbound tourism shows evidence of causality for Srilanka. In China, long run cointegration between EAR and PCG is present. In the long run, earnings from inbound tourism depends on per capita economic growth and in short run, there is 11 percent chance for China to move from short run shocks to long run stable equilibrium. Also, in short run, per capita economic growth granger causes foreign exchange earnings from inbound tourism for China. In Srilanka, long run cointegration between PCG and EAR is absent. But, in short run, there is a positive impact of PCG on EAR. There is 5 percent chance for Srilanka to move from short run disequilibrium to long run stable equilibrium. Also, in short run, there is granger causality running from PCG to EAR. The data are able to explain 74 percent of actual scenario (R square- 0.74). Therefore Srilanka can effectively change its current economic crisis by focusing on attracting FDI into its tourism sector as it is a high import economy majorly dependent on revenue from tourism. Chowdhury P R and Anuradha.A. (2020) applied Auto Regressive Distributed Lag Modelling Approach to find out the impact of economic growth and proved that there is a cointegration between FDI and economic growth in long run. However the finding also showed that in short run, both economic growth and FDI granger caused each other. In the current study the results shows evidence of granger causality running from PCG to FDI for India and China. Whereas for Singapore the granger causality is running from FDI to PCG. Spain which was much affected by the pandemic did not show any causal effects but the short run phenomenon, showed a positive impact of FDI on economic growth. In Srilanka, long run cointegration between PCG and FDI is present (3.78). But, in short run phenomenon, there is positive impact of FDI on economic growth. There is 67 percent chance for Srilanka to move from short run disequilibrium to long run stable equilibrium. Therefore Srilanka can effectively change its current economic crisis by focusing on attracting FDI into its tourism sector to encourage smart tourism as it is a high import economy majorly dependent on revenue from tourism.

Therefore empirical evidence gives a clear picture that there is causal effect of Per capita Growth rate on Foreign exchange earnings from inbound tourism for the selected major economies in Asia and Spain which was much affected by the pandemic. Also it is clear from the results of the analysis that there is causal effect of FDI on Per capita Growth rate for all the countries selected for the research except Spain. The results imply that there is urgent need for the countries across the world, especially those which are highly dependent on the revenue from tourism to formulate recovery measures through FDI towards technology integration in tourism post-pandemic in line with the emerging new travel trends. With the emerging new travel trends there is also an urgent need to effectively design suitable curriculum for 'Sustainable and responsible tourism' in higher education in order to satisfy the SDGs set by UN to safeguard the planet.

7 Policy implications

7.1 Recovery measures to ensure socio economic sustainability in tourism

Cannonier and Burke (2019) opined that a 10 percent increase in tourism spending is expected to increase economic growth between 0.4 and 0.7 percent. The analysis was done for the small states in the Caribbean islands. The investigators call the policymakers to do an efficient allocation of funds to enhance the tourism quality and innovations.

Although the International Monetary Fund (IMF) has provided emergency financial assistance to a number of pandemic affected countries which are highly dependant on tourism sector to meet their balance of payments needs, countries cannot keep on looking forward for such funds from IMF. IMF is giving such funds to pull these countries out from financial crisis during emergency and uncertain situations (Viz., pandemic outbreak). The countries should learn to manage the crisis situations through effective policy measures for recovery. Some of the suggested recovery measures after reviewing the results of the study (supports causal effects of EAR and PCG) are given below.

Masud Rana Mondal (2020) in their article on "Tourism as a livelihood development strategy: a study of Tarapith Temple Town, West Bengal" found that the lack of human capital among the local people prevented them from reaping the economic benefits from the enormous growth of tourism in the area. Therefore the government has to focus on giving formal training the artisans and the local people to engage with the visitors as tourists to ensure their socio economic stability and sustainability.

Regional economic effects should be assessed at the recovery stage after a disaster based on short and long-term aspects says Marly Valenti Patandianan & Hiroyuki Shibusawa (2020) in their study in Japan which is highly prone to earthquakes and volcanic eruptions. By doing so the socio economic stability of that region can be ensured along with sustainability.

Prasad, N., Kulshrestha, M. (2015) from their Input-output analysis found that foreign tourist expenditure has a positive impact on the tourism sector by boosting employment generation both directly and indirectly. They strongly support the training, capacity building and sensitisation specific to different categories of service providers in order to strengthen the "tourism awareness programmes" to ensure socio economic stability.

Umurzakov, U., et al., (2022) studied the belt and road countries for tourism and sustainable development, and suggested the governments of these countries to introduce tax benefits, loans and subsidies for small and medium tourism-oriented enterprises in rural areas to promote eco-tourism, agro-tourism, and other types of tourist activities. In addition, they have advised these tourism dependent countries to implement policy measures to stimulate private sector to supply tourism-associated infrastructure and to increase the development of tourism sector and further consequently, to promote sustainable development. A liberal FDI policy can bring more involvement of private sector and foreign players to supply tourism associated infrastructure to improve the tourism development and to ensure economic stability.

Majeed, M.T., Mazhar, M. (2021) studied the volatility in tourism sector in low-income countries (LICs) and middle-income countries (MICs) and suggested these countries to allow international tourists to easily start business or open ventures in destination economies (mainly LICs and MICs) without any complexity and delay, that in turn would minimize fluctuations in the tourism sector. This is possible majorly by attracting the Foreign direct investment. Mishra, V., Sharma, M.G. (2021) in their study developed a framework for Promotion of Medical Tourism in India. They used the SERVQUAL approach to measure the quality dimensions of medical tourism in India and suggested the healthcare administration to improve service quality in their organization to eventually attract patients from Gulf and Western Countries which can improve the socio economic development of India and similar countries that are welcoming medical tourism.

Collaborative and innovation business models between local government and tourism operators can strengthen the economic stability of the people in the destinations says C. Pons-Morera, et al., (2018). Sari Hassoun, S.E., et al., (2021) used two variables natural logarithm of per capita gross domestic product (GDP) and natural logarithm of per capita international and national tourism expenditure (ITE) to study the relationship between the tourism sector and economic growth in Algeria over the period of 1995–2017. They found the relationship between the tourism sector and economic growth in Algeria to be positive and suggested to improve the domestic tourism by making efforts on development in air transport and all transport infrastructure and development of mass-market package tourism to enhance economic growth. The next section gives the policy

implications to improve the tourism sector by attracting FDI inflows for technology integration in tourism to ensure socio economic stability post pandemic.

7.2 Attracting FDI inflows for technology integration in tourism sector to encourage Smart Tourism

The outcome of the study calls for a conducive FDI regulatory framework in the technology front that is necessary for attracting FDI in digital infrastructure to develop smart tourism. Any successful step towards attracting FDI in digital infrastructure will benefit the local companies, especially the small and medium tourist enterprises. 'Smart' is a word coined to narrate the integration of technology to economic and social development. Use of technology to preserve the natural resources and biodiversity should be the key element in tourism development in the future to support sustainability. Creating awareness about the socio-cultural authenticity of host communities and conserving their cultural heritage and traditions by using ICT is the need of the hour.

Technology can be used to ensure viable and sustainable economic operations to benefit all the stakeholders through fairly distributed income to alleviate poverty in the destination or the host communities. Technology enabled co-creation of the desired experience can be made possible with the AI tools. Cloud computing services, IOT and end user internet service systems can be used to develop innovative technological tools to enhance the co-creation experience of the tourists. Tyan, I., (2021) opine that blockchain technology could provide an excellent opportunity to create cryptocurrency-based rewarding system to encourage tourists' sustainable behaviour. The tourist would get tokens which they could spend on other goods and services in the host destination.

Tourists can be given the experience of cultural resources in the destination through technological tools such as Augmented Reality, creation of Kinect station, use of innovative glasses in closed spaces, establishing touch-screen panels and innovative displays in open spaces. Creation of smart tourism destination involves effective use of technology. Application of AI will become imperative to pace up with the latest technology in tourism. FDI can be attracted in this area to attract more tourists to the countries highly dependent on the revenue from tourism. Lopez de Avila (2015) defined the sustainable tourism destination as surroundings with increased quality of life through state-of-art technology infrastructure that guarantees the sustainable development of tourists areas where the tourists can have facilities to interact with residents in the destination. Therefore, FDI could play a key role in making a difference in the tourism industry and the sustainable growth and development of the country through earnings from inbound tourism.

Use of technology by means of an IT platform that can integrate the information on tourism with information on consumption and use of resources in the host destination, is the need of the hour, to ensure sustainable economic growth, especially in the countries where tourism sector is a major contribution to the GDP. Improving the tourism service quality and reducing the tourism industry vulnerability can ensure the socio economic sustainability post pandemic. The new technologies namely, Metaverse, AR, VR, AI and recommendation system for the choice of destinations suitable for the consumer are already in implementation in the tourism industry in hightech economies. By bringing smartness into tourism by attracting FDI, countries like Srilanka can ensure sustainable economic growth and development.

7.3 Holistic approach to achieve smart, stable and sustainable growth in tourism through higher education

The governments of the countries of the world can initiate a holistic approach to achieve smart, stable and sustainable growth through tourism sector by attracting FDI to promote educational tourism with a proper structured curriculum. Universities can play a vital role in making the students think about their local community and the global community, compare the population, their habits and the infrastructure requirement based on the heritage and needs during the current digital era. The approach towards sustainable tourism can be achieved by making the learners think holistically by travelling to other countries of the world to understand the global community and to start working towards the sustainable development goals.

Educational tourism with structure curriculum with a focus on smart tourism can bring in an enormous change in the thought process of the stakeholders Viz., higher education institutions, students, teachers,

governing bodies and the domestic or local community in terms of research in tourism to achieve the ultimate goal of smart and sustainable tourism. The research institutions at the local level can associate with international level to arrive at novel and innovative ideas to march towards sustainable tourism. International funding supported by strong FDI norms in higher education in the area of tourism research through educational tourism will reap the benefits of the best and sustainable tourism practices followed across the world, thereby protecting the cultural heritage and the environment of different countries of the world in a more organised manner.

It is not enough for higher educational institutions to just impart the knowledge about sustainable development goals in the young minds. The higher educational institutions should come forward to give practical exposure to the students by sending them to other countries under international immersion programs. By introducing such offerable mandatory credit based international immersions through internships in the basic curriculum for the completion of the degree programs the holistic approach to achieve smart, stable and sustainable growth in through higher education can be realised.

8 Conclusion

The causal effects of Per capita Growth rate on Foreign exchange earnings from inbound tourism and FDI on Per capita Growth rate are clearly explained in the current chapter in view of suggesting recovery measures through FDI towards technology integration in tourism post-pandemic. In line with the emerging new travel trends to ensure socio economic stability the need for attracting FDI to encourage smart tourism in countries that are majorly dependent on tourism revenue is imperative. The policy implications strongly supports training in tourism sector and educational institutions, improving the quality of services to encourage medical tourism, use of ICT, cloud computing services, IOT, end user internet service systems, AR, VR, Metaverse and AI in tourism can ensure the socio economic stability through speedy recovery of the tourism sector from the current downfall due to COVID 19 pandemic. It is high time that tourism destinations seek knowledge to transform their business strategies into novel trends like Staycation, Wellness and Spa Tourism, Virtual Tourism, Ecotourism or Eco Travel, Green Travel and Sustainable Tourism through technology integration to ensure their socio economic sustainability. The higher educational institutions should give practical exposure to the students by introducing offerable, mandatory, credit based, international immersions through internships by making it as a component in the basic curriculum for the completion of the degree programs which would promise a holistic approach to achieve smart, stable and sustainable growth not only in tourism but also to achieve other SDGs framed by the UN for the betterment of the planet.

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