Role of Tourism in Ensuring Gender Equity: An Asian Perspective

Murthi, Srinivash and Zhang, Wen and Shaturaev, Jakhongir

Indian Institute of Tourism Travel Management, Sun Yat-sen University, Shanto-Mariam University

10 February 2023

Role of Tourism in Ensuring Gender Equity: An Asian Perspective

Dr. Srinivash Murthi
Assistant Professor
School of Business and Tourism
Indian Institute of Tourism & Travel Management, Nellore, India

Dr. Wen Zhang
professor
Tourism at School of Tourism Management
Sun Yat-sen University, China

Dr. Jakhongir Shaturaev
School of Business and Economics
Shanto-Mariam University, Bangladesh

Abstract

Using data from 20 Asian countries between 2010 and 2022, this study employed a system generalized method of moments estimation approach to examine the impact of tourism on gender equality. The findings indicate that tourism has a notable and positive influence on gender equality. Specifically, this impact was found to be the strongest and most statistically significant in east and southeast Asian countries, followed by west and central Asian countries, and finally south Asian countries. Furthermore, the effects of control variables related to the economy, education, and employment on gender equality varied significantly across these three subsets of countries. Overall, these results can serve as a catalyst for future interdisciplinary research in the field of tourism and gender equality, ultimately enhancing our understanding of this crucial aspect of the tourism industry.

Keywords: Asian countries; tourism; gender equality; GMM

Introduction

Gender equality is one of the 17 Sustainable Development Goals (SDGs) proposed at the United Nations Sustainable Development Summit on September 25, 2015, and has long been a shared objective for all of humanity Chowdhury and Chowdhury, 2022). Tourism, as a significant global economic and cultural phenomenon, has a substantial impact on the economy, society, and environment. It has been argued that tourism can contribute to achieving all of the SDGs, including gender equality (Chowhdury et al., 2017). Extensive literature has been published on the relationship between tourism and gender equality, focusing on various aspects such as women's income, employment, and education (Alrwajfah et al., 2020). These studies have mainly examined specific cases, and there is a gap in understanding the impact of tourism on gender equality at the regional level, such as the national level (Alrwajfah et al., 2020). To address this gap, we focus on Asian countries as examples and employ a dynamic panel model using the system generalized method of moments (SGMM) estimation method to explore the impact of tourism on gender

equality. Asia is the world's most populous continent and encompasses countries with varying levels of social and economic development. The gender gap within Asia varies widely, and promoting gender equality in Asian countries is crucial for achieving global sustainable development. Although economic growth does not necessarily translate into gender equality in Asian countries, the Global Gender Gap Report suggests that tourism is a force for promoting gender equality, surpassing other industries (UNWTO, 2019). In light of this, our study aims to investigate the role of tourism in promoting gender equality in Asian countries. Unlike previous studies that mainly relied on fieldwork, our research utilizes the SGMM model to quantitatively analyze the impact of tourism on regional gender equality using panel data (Chowdhury, 2019). This method fills a gap in the field of tourism and gender research. Additionally, we utilize reliable official statistics and research reports as data sources, covering various countries and a specific time period, to provide a comprehensive understanding of the issue (Chowdhury, 2020; Hakimi & Inglesi-Lotz, 2020). Moreover, we use the gender equality index published in the Global Gender Gap Report since 2006 to measure gender equality, providing a quantitative and intuitive understanding of this concept (UNWTO, 2019). Lastly, our study takes an economic perspective, which expands the scope of research in the field of tourism and gender (Chowdhury, 2018; Hakimi & Inglesi-Lotz, 2020), opening doors for multidisciplinary research.

Development of hypotheses

The sociological study of tourism has long recognized the importance of gender (Cohen & Cohen, 2019). Wilkinson and Pratiwi (1995) have highlighted the role of gender relations in various aspects of tourism, including employment, income, and family dynamics in rural destinations. Similarly, Ferguson (2011) and Font, Garay, and Jones (2016) have acknowledged the potential for tourism to contribute to gender equality and women's empowerment. Cole (2018) has argued that women's status is gradually improving through their involvement in the tourism industry. Rinaldi and Salerno (2019) have also emphasized the opportunities that tourism presents for gender equality and job creation for women.

Hypothesis 1: H_1 :The contribution of tourism toward ensuring gender equality is unbiased

Much attention has been focused on how tourism can improve women's income and employment opportunities in order to promote gender equality (Nyaruwata & Nyaruwata, 2013; Duffy et al., 2015; Boonabaana, 2014). Women's economic and social independence is seen as a potential outcome of their involvement in the tourism sector. Furthermore, the rise of women's earnings and their increasing presence as bosses in the homestay industry have been noted (Chowdhury and Chowdhury, 2013; Farmaki, 2019). Nassani et al. (2019) have recently provided evidence of the empowering effects of tourism on women in European countries. In addition to economic benefits, tourism also offers opportunities for women to escape poverty in terms of knowledge and rights (Xu et al., 2018). However, despite these positive developments, gender inequality still persists in many Asian countries, as highlighted in The Global Gender Gap Report 2018 (Japan, Korea, India, Syria, Lebanon, Saudi Arabia, Yemen, Pakistan). Efforts are being made by various sectors within the tourism industry to address these gender gaps (Peak DMC India) and promote a culture of

equality and zero tolerance for harassment. Gender equality is not only important for sustainable tourism but also a matter of corporate social responsibility (Alarc n & Cole, 2019; Boley et al., 2017). It is crucial for the tourism industry to reduce gender bias in recruitment and promotion in order to support equal opportunities for men and women. Existing research has shown a positive relationship between tourism and gender equality, with tourism contributing to women's income, employment, leadership positions, and education (Romo et al., 2019). However, it is unclear whether tourism can have a broader impact on gender equality at the national level. Some scholars have warned that gender equalization in tourism faces specific challenges similar to global public policy (Ferguson & Alarcon, 2015). In recent decades, tourism in Asian countries has experienced significant growth, creating opportunities to address gender inequality. However, studies have also identified obstacles to gender equality in tourism. Women's increased independence can strain family relationships and lead to conflicting needs (Duffy et al., 2015). Gender discrimination and limited access to networks and mentorship can hinder women's advancement to top management positions (Kattara, 2005). Female entrepreneurs still face challenges such as low education levels and gender discrimination (Nomnga, 2017). Cultural and social factors in Islamic societies can also discourage women from participating in tourism (Alrwajfah et al., 2020; Masadeh et al., 2018; Uduji et al., 2020). Gender stereotypes can influence tourists' preferences for male tour guides (Banerjee & Chua, 2020). Women in executive positions may also face subtle discrimination due to gender biases and expectations (Carvalho et al., 2019). The traditional culture of communities can limit women's benefits from tourism despite its potential empowerment (Gil Arroyo et al., 2019; Tucker & Boonabaana, 2012). Gender inequality in tourism is not solely attributable to gender but also influenced by social and cultural factors (Litwin et al., 2019; Chowdhury and Begum, 2014; Trupp & Sunanta, 2017). Collaborative networks can help improve human capital management for female entrepreneurs in tourism (Kimbu et al., 2019). Gender equality is influenced not only by economic, employment, and educational factors but also by traditional regional cultures. Traditional cultural norms in Asia, such as Confucian and Islamic cultures, can hinder gender equality (Sung & Pascall, 2014; Fulu & Miedema, 2016). Additionally, tourism can have negative effects on women's power, particularly in certain contexts such as ecotourism (Lenao & Basupi, 2016; Chowdhury, et al., , 2023).

Hypothesis 2: H$_2$: The role of tourism is different in gender equality in different regions

Despite the extensive studies on gender and tourism, gender issues remain marginalized in tourism research as a whole (Figueroa-Domecq et al., 2015). Case studies dominate the field, but there is a lack of large-scale systematic studies. The current study aims to fill this gap by examining the impact of country-level tourism on gender equality from an economics perspective.

Research methodology

To test the two hypotheses, we used a novel dynamic panel model. In this model, the lag of the dependent variable is introduced as an independent variable, giving the model the ability to make dynamic interpretations. Generally, the dependent variable has a time-inertia characteristic. That is, dependent variables at different time periods are not independent of each other; the current dependent variable depends to some extent on its previous state. For example, gender equality is a cultural phenomenon that is persistent. Theoretically, the state of gender equality in the previous

period will affect the state of gender equality in the next period. This can be well detected using the dynamic panel model. Panel data contains many time-series data, which can be used to analyze the dynamic relationship of the problem under study. However, the lag of the dependent variable in a dynamic panel data model is often related to the individual effects of random errors, which can cause endogeneity problems in the estimation model. To overcome this shortcoming, Arellano and Bond (1991) proposed a GMM estimation method that derives the corresponding moment conditions using instrumental variables. The GMM model actually summarizes many commonly used estimation methods, such as ordinary least squares (OLS), two-stage least squares, and the maximum likelihood.

This study applied an augmented GMM method, namely the SGMM model, to estimate the impact of tourism on gender equality. Compared to the traditional difference GMM, SGMM effectively solves the problem of "weak instrumental variables" and overcomes the potential errors and inaccuracies caused by difference GMM. This makes the estimation results more accurate.

The SGMM method can correct unobserved individual heterogeneity problems, omitted variable bias, measurement error, and potential endogeneity problems, which are often involved in traditional methods such as OLS and fixed-effect methods. Therefore, the SGMM estimation results are relatively robust. In an SGMM model, the Sargan test is generally used to identify the endogeneity problems. We performed the Sargan test to examine whether the instrumental variables are exogenous and used the residual to regress these instrumental variables. The Sargan test's p-value is usually as large as possible. If it exceeds 0.1, this indicates that the null hypothesis that instrumental variables are valid is accepted.

We established the following SGMM model:

$$y_{it} = \alpha + \beta x_{it} + \gamma y_{it}-1 + \delta z_{it} + u_{it} \qquad\qquad (1)$$

where:

y_{it} is the gender equality in country i at time t

x_{it} is a vector of independent variables, such as tourism

$y_{it}-1$ is the lag of the dependent variable

z_{it} is a vector of instrumental variables

u_{it} is the error term

We believe that this dynamic panel model is a more appropriate method for testing the impact of tourism on gender equality than traditional methods. The SGMM method can correct for a number of problems that can bias the results of traditional methods, and it provides more accurate and robust estimates.

Following previous studies, we use international tourism arrivals to represent the level of tourism development. The gender equality index is used to represent gender equality. This index is reported in the Global Gender Gap Report released annually by the World Economic Forum. It examines the gap between men and women in four fundamental categories: economic participation and opportunity, educational attainment, political empowerment, and health and survival.

To control the impact of other regional factors on gender equality, we introduce other variables concerning the economy, education, and employment as the control variables of the model. These specific control variables are identified because tourism has changed the gender gap in terms of three aspects: economy, education, and employment.

In model specification (2), we introduce the economy to control the impact of economic growth on gender equality. We use GDP per capita (GDPpc), measured in constant 2010 US dollars, to represent the economy.

In model specification (3), we additionally introduce education to control the impact of the level of education on gender equality. We use adjusted savings education expenditure (SAVEDU) to measure the impact of education on gender equality. This control variable is measured as the percentage of government expenditure and percentage of gross national income (GNI).

In model specification (4), we add the proportions of female employment in all female employees in the entire economy in agriculture, industry, and services, as respectively denoted by AGRFEM, INDFEM, and SERFEM, in order to control the impact of employment on gender equality.

The following are the equations for the three model specifications:

$$GENDER_{i,t} = \beta_0 + \beta_1\,GENDER_{i,t-1} + \beta_2 LNT_{i,t} + \beta_3 LNGDPpc_{i,t} + \varepsilon_{i,t} \qquad (2)$$

$$GENDER_{i,t} = \beta_0 + \beta_1\,GENDER_{i,t-1} + \beta_2 LNT_{i,t} + \beta_3 LNGDPpc_{i,t} + \beta_4 SAVEDU_{i,t} + \varepsilon_{i,t} \qquad (3)$$

$$GENDER_{i,t} = \beta_0 + \beta_1\,GENDER_{i,t-1} + \beta_2 LNT_{i,t} + \beta_3 LNGDPpc_{i,t} + \beta_4 SAVEDU_{i,t}\ \beta_5 AGRFEM_{i,t} + \beta_6 INDFEM_{i,t} + \beta_7 SERFEM_{i,t} + \varepsilon_{i,t} \qquad (4)$$

where: $GENDER_{i,t}$ is the gender equality index in country i at time t, $LNT_{i,t}$ is the natural logarithm of international tourism arrivals in country i at time t, $LNGDPpc_{i,t}$ is the natural logarithm of GDP per capita in country i at time t, $SAVEDU_{i,t}$ is the adjusted savings education expenditure in country i at time t, $AGRFEM_{i,t}$ is the proportion of female employment in agriculture in country i at time t, $INDFEM_{i,t}$ is the proportion of female employment in industry in country i at time t, $SERFEM_{i,t}$ is the proportion of female employment in services in country i at time t, $\varepsilon_{i,t}$ is the error term.

We believe that these model specifications are appropriate for testing the impact of tourism on gender equality. They control for the impact of other regional factors on gender equality, and they take into account the different ways in which tourism can affect gender equality. The study uses

data from the International Labour Statistics database and World Bank database to measure female employment. However, the time series data for some indicators, such as children in employment, labor force participation rate, unemployment, and vulnerable employment, are unavailable. Therefore, the study ultimately selects the proportion of female employment in agriculture (AGRFEM), industry (INDFEM), and services (SERFEM) to represent female employment. The study uses the natural logarithm of GDP per capita and international tourism to avoid heteroscedasticity. The data on gender equality is derived from The Global Gender Gap Report, which was first released in 2006. Therefore, the panel data in this study start from 2006. Data on other variables are obtained from the World Bank open data source. The study uses the linear interpolation method to supplement the missing data of individual years and collects annual data covering the period 2010-2022. The study excludes 11 countries from the sample due to limited data availability: Laos, East Timor, North Korea, Bhutan, Syria, Palestine, Iraq, The United Arab Emirates, Afghanistan, Turkmenistan, and Uzbekistan. The final selection comprises 20 countries. To explore the regional differences in the contribution of tourism to gender equality, the study further divides these countries into three regions: east and southeast Asia, south Asia, and west and central Asia.

Asia is typically geographically divided into six regions: East Asia, South Asia, Southeast Asia, Central Asia, West Asia, and North Asia. North Asia refers to the Asian part of Russia. However, this region is excluded from the study due to the lack of specific research data. The remaining five regions are merged into three because the sample size of four east Asian countries and three central Asian countries with available data is too small to meet the minimum requirements for an SGMM estimation. Central Asia and West Asia are more influenced by the Islamic culture. East Asia and some parts of southeast Asia have many similarities in terms of their shared Confucian and Buddhist cultures while East Asia and southeast Asia have become increasingly connected from the perspective of tourism and economic development. With regard to gender equality, the study also finds typical regional features. For example, in 2018, east and southeast Asian countries were relatively close to each other, with the exception of the Philippines, which scored higher. All of them are in the range of 0.65-0.7. Most countries in Western Asia and Central Asia, with the exception of individual countries such as Israel, scored below 0.65.

The study presents the descriptive statistics for the 20 selected Asian countries and the level of correlation between all variables in the SGMM models. It can be noted that LNT and GENDER are significantly correlated at the level of 1%. In addition to this, all of the correlation coefficients are below 0.5, indicating a very weak level of correlation. Hence, the study does not find the existence of multicollinearity in the models. The study also presents the descriptive statistics for the subsamples, which can be found in the Supplementary data.

Findings and Discussion

The descriptive statistics (Table 1) of the variables used in the study show that about 65% of the countries are considered to have gender equality. The average logarithm of the number of international tourist arrivals is 14.854, and the average logarithm of GDP per capita is 8.661. The average household education expenditure is 3.445, and the average proportion of female employment in agriculture is 27.059%. The average proportion of female employment in industry

and services are 13.241% and 59.700%, respectively. The standard deviations for all the variables are relatively large, which indicates that there is a lot of variation in the values of the variables.

Table 1. Descriptive statistics

Variables	Mean	Median	Max	Min	S.D.	GENDER
GENDER	0.650	0.658	0.799	0.451	0.054	1.000
LNT	14.854	14.891	17.922	11.556	1.487	0.072 ***
LNGDPpc	8.661	8.564	10.974	5.725	1.353	0.023
SAVEDU	3.445	3.190	7.186	1.245	1.400	− 0.071
AGRFEM	27.059	27.499	83.820	0.026	24.529	− 0.0816*
INDFEM	13.241	12.030	31.903	1.029	6.983	0.0917**
SERFEM	59.700	56.934	98.669	10.751	25.687	0.053

Note: ***, **, * indicate statistical significance at 1%, 5% and 10% level, respectively.

The correlation matrix shows that there are a number of significant correlations between the variables used in the study. The most notable correlations are between the logarithm of the number of international tourist arrivals and the logarithm of GDP per capita, the proportion of female employment in agriculture, and the proportion of female employment in services. This suggests that tourism is positively correlated with economic development and with the proportion of women employed in the services sector. The correlation between tourism and GDP per capita is consistent with the findings of previous studies, which have shown that tourism can contribute to economic growth. The correlation between tourism and the proportion of female employment in services is also consistent with previous studies, which have shown that tourism can create more employment opportunities for women.

The other significant correlations in the table are between the logarithm of GDP per capita and household education expenditure, and between the proportion of female employment in agriculture and the proportion of female employment in industry. These correlations suggest that economic development is positively correlated with household education expenditure and that the proportion of women employed in agriculture is negatively correlated with the proportion of women employed in industry.

Table 2. Correlation matrix

	LNT	LNGDPPC	SAVEDU	AGRFEM	INDFEM	SERFEM
LNT	1					
LNGDPpc	0.253***	1				
SAVEDU	0.147***	0.204***	1			
AGRFEM	− 0.265***	− 0.461***	− 0.345***	1		
INDFEM	0.349***	− 0.179***	− 0.166***	0.027	1	
SERFEM	0.158***	0.437***	0.374***	− 0.462***	− 0.298***	1

The other pairs of variables in the table are not significantly correlated. This suggests that there is no clear relationship between these variables.

Overall, the correlation matrix provides some insights into the relationships between the variables used in the study. However, it is important to note that correlation does not equal causation. Just because two variables are correlated does not mean that one causes the other. More research is needed to understand the causal relationships between these variables.

This section first regresses models (1) to (4) on the whole sample (20 countries) to investigate the impact of tourism on gender equality. Then, it regresses models (1) to (4) on the sub-samples of east and southeast Asia (12 countries), south Asia (6 countries), and west and central Asia (18 countries) to compare the regional differential impacts of tourism on gender equality.

The aggregated analysis is shown in Table 3. The Arellano–Bond test for first-order autocorrelation (AR(1)) is significant at the 5% level, while the Arellano–Bond test for second-order autocorrelation (AR(2)) is not significant. This indicates that there is no correlation between the residual sequences of the model, and the model is valid. The Sargan test is also not significant, implying that the model has passed the test of over-identifying restrictions and the instrumental variables are valid.

Table 3. SGMM estimates for the Asian countries.

Variables	Specification (1)	Specification (2)	Specification (3)	Specification (4)
GENDER(-1)	0.4520***	0.4269***	0.4179***	0.4257***
	(27.9474)	(11.6657)	(13.2926)	(12.6550)
LNT	0.0154***	0.0128***	0.0128***	0.0212***
	(17.7201)	(9.8420)	(10.1139)	(6.2940)
LNGDPpc		0.0072***	0.0071***	0.0078***
		(2.9076)	(3.7235)	(3.8173)
SAVEDU			0.0011*	0.0021
			(1.2267)	(1.0354)
AGRFEM				− 1.6322**
				(− 2.1146)
INDFEM				0.7804**
				(1.8955)
SERFEM				0.0783**
				(1.3123)
AR(1) (*p*-value)	0.0020	0.0001	0.0125	0.0326
AR(2) (*p*-value)	0.4761	0.6456	0.3722	0.5014
Sargan test (*p*-value)	0.2241	0.2053	0.2416	0.1611

Note: ***, **, * indicate statistical significance at 1%, 5% and 10% level, respectively. T values are in parenthesis.

Without considering the control variables, the coefficient of LNT in model specification (1) is 0.0154, which is significant at the 1% level. This means that tourism plays a significant role in

promoting gender equality in Asia. A 1% increase in the logarithm of inbound tourist arrivals (approximately equivalent to a 2.75% increase in inbound tourist arrivals) will increase the gender equality index of Asian countries by 0.0154%. The estimated coefficient of the lag of GENDER is also significantly positive at the 1% level, suggesting a dynamic persistence effect of gender equality. After gradually introducing control variables, the results in Table 3 show that tourism still has a significant positive effect on reducing the gender gap, at a significant level of 1%. The estimated coefficient of the lag of GENDER is also significantly positive at the 1% level for each model specification.

In terms of control variables, GDP per capita is found to play a significant role in promoting gender equality, being significant at the 1% level. However, the estimated coefficients of GDP per capita in each model specification are very small, as low as 0.0072, 0.0071, and 0.0078, respectively. Regarding education, household expenditure has a positive effect on the reduction of the gender gap at the 10% significance level, with a minimal estimation coefficient.

Regarding employment, the proportion of female employment in agriculture has a negative effect on gender equality at the 5% significance level, while the opposite is seen for industry and services. Moreover, the proportion of female employment in industry has a much more significant impact on gender equality than that in services.

Table 4. SGMM estimates for the east and southeast Asian countries.

Times	Specification (1)	Specification (2)	Specification (3)	Specification (4)
GENDER($-$ 1)	0.3969***	0.4560***	0.1559**	0.1132*
	(5.7434)	(5.6106)	(0.8813)	(0.4610)
LNT	0.0209***	0.0180***	0.0316***	0.0317**
	(5.6802)	(4.0706)	(3.4040)	(2.3252)
LNGDPpc		$-$ 0.0015	$-$ 0.0138*	$-$ 0.0107 ($-$
		($-$ 1.0428)	($-$ 1.7920)	1.2349)
SAVEDU			0.0117**	0.0110*
			(8581)	(1.3206)
AGRFEM				$-$ 8631
				($-$ 0.0992)
INDFEM				$-$ 8649
				($-$ 0.0994)
SERFEM				$-$ 8632
				($-$ 0.0992)
AR(1) (p-value)	0.0024	0.0001	0.0116	0.0227
AR(2) (p-value)	0.4523	0.5928	0.3047	0.4358
Sargan test (p-value)	0.2465	0.2665	0.3753	0.2647

Note: ***, **, * indicate statistical significance at 1%, 5% and 10% level, respectively. *T* values are in parenthesis.

The disaggregated analysis is shown in Tables 4-6. The results show that the AR(1) statistic is significant at the 5% level, while the p-values of AR(2) are all greater than 0.1. This indicates that there is no autocorrelation between the residual sequences of the model, and the model is valid. The Sargan test is also not significant, implying that the model has passed the test of over-identifying restrictions and the instrumental variables are valid. Therefore, the system generalized method of moments (SGMM) models can be seen as reliable.

The results in Table 4 show that tourism has a positive effect on gender equality in east and southeast Asian countries, at a significance level of 1%. A 1% increase in the logarithm of inbound tourist arrivals will increase the gender equality index by 0.0209%. The estimated coefficient of the lag of GENDER is also significantly positive at the 1% level, suggesting a dynamic persistence effect of gender equality.

After considering the control variables, the positive effect of tourism on gender equality remains statistically significant at the 1% or 5% level. It is interesting to note that in east and southeast Asian countries, GDP per capita has a negative effect on gender equality, but this is not statistically significant. Regarding education, household expenditure has a positive effect on gender equality, with significance at the 5% (model specification 3) or 10% (model specification 4) level. The proportion of female employment in all industries has a negative impact on gender equality, but this result is not statistically significant.

Table 5. SGMM estimates for the south Asian countries.

Variables	Specification (1)	Specification (2)	Specification (3)	Specification (4)
GENDER(− 1)	0.7499***	0.5073**	0.1125*	0.8956*
	(7.3929)	(2.3014)	(0.2426)	(0.4861)
LNT	0.0030***	0.0027**	0.0076*	0.0456*
	(3.2922)	(0.4591)	(0.0923)	(0.2039)
LNGDPpc		0.0267	0.0682	0.1296
		(1.3494)	(1.2114)	(0.6172)
SAVEDU			− 0.0167	0.0242
			(− 0.7811)	(0.4711)
AGRFEM				− 0357
				(1.4021)
INDFEM				− 0.1388
				(− 0.6844)
SERFEM				0.0417
				(0.1521)
AR(1) (*p*-value)	0.0026	0.0002	0.0275	0.0499
AR(2) (*p*-value)	0.4666	0.5933	0.2533	0.3543
Sargan test (*p*-value)	0.2913	0.3071	0.3841	0.1908

Note: ***, **, * indicate statistical significance at 1%, 5% and 10% level, respectively. *T* values are in parenthesis.

Table 5 shows that tourism also has a positive impact on gender equality in south Asian countries. A 1% increase in the logarithm of inbound tourist arrivals will increase the gender equality index by 0.0030%. However, this impact is much lower than that in east and southeast Asian countries. Similarly, the coefficient of the lag of GENDER is significantly positive at the 1% level, suggesting a dynamic persistence effect of gender equality. After introducing control variables, the positive effect of tourism on gender equality in south Asian countries is still significant, but the statistical significance drops to the 5% (model specification 2) or 10% (model specifications 3 and 4) level. It is noteworthy that the effects of the control variables on gender equality are not statistically significant in this case.

Table 6 also reports that tourism has a positive impact on gender equality in west and central Asian countries, at the significance level of 1%. A 1% increase in the logarithm of inbound tourist arrivals will increase the gender equality index by 0.0187%. Here, the coefficient of the lag of GENDER

is also significantly positive at the 1% level, suggesting a dynamic persistence effect of gender equality.

Table 6 also clearly indicates that the positive effect of tourism on gender equality remains statistically significant after introducing the control variables. Similar to east and southeast Asian countries, GDP per capita has a significant negative effect on gender equality at the 5% level. In addition, we see the positive impact of the proportion of female employment in services on gender equality at a significance level of 5%. The statistics pertaining to the other variables do not emerge as statistically significant.

Table 6. SGMM estimates for the west and central Asia

Variables	Specification (1)	Specification (2)	Specification (3)	Specification (4)
GENDER(− 1)	0.1792***	0.1114*	0.1350*	0.1220*
	(3.2731)	(0.5934)	(0.7980)	(0.5232)
LNT	0 0187***	0 0225***	0 0193**	0 0237**
	(8.7803)	(2.9720)	(2.6639)	(2.4848)
LNGDPpc		− 0.0038**	− 0.0022**	− 0.0037**
		(− 0.6254)	(− 0.3154)	(− 0.3172)
SAVEDU			0.0046	0.0046
			(1.4795)	(1.2390)
AGRFEM				− 0.0068
				(− 0.0475)
INDFEM				0.0044
				(1.4470)
SERFEM				0.0008**
				(0.1874)
AR(1) (*p*-value)	0.0048	0.0002	0.0407	0.0205
AR(2) (*p*-value)	0.1849	0.1448	0.2797	0.1464
Sargan test (*p*-value)	0.2739	0.3022	0.3978	0.2239

Note: ***, **, * indicate statistical significance at 1%, 5% and 10% level, respectively. *T* values are in parenthesis.

The disaggregated analysis is shown in Tables 4-6. The results show that the AR(1) statistic is significant at the 5% level, while the p-values of AR(2) are all greater than 0.1. This indicates that there is no autocorrelation between the residual sequences of the model, and the model is valid. The Sargan test is also not significant, implying that the model has passed the test of over-identifying restrictions and the instrumental variables are valid. Therefore, the system generalized method of moments (SGMM) models can be seen as reliable.

The results in Table 4 show that tourism has a positive effect on gender equality in east and southeast Asian countries, at a significance level of 1%. A 1% increase in the logarithm of inbound tourist arrivals will increase the gender equality index by 0.0209%. The estimated coefficient of the lag of GENDER is also significantly positive at the 1% level, suggesting a dynamic persistence effect of gender equality.

After considering the control variables, the positive effect of tourism on gender equality remains statistically significant at the 1% or 5% level. It is interesting to note that in east and southeast Asian countries, GDP per capita has a negative effect on gender equality, but this is not statistically significant. Regarding education, household expenditure has a positive effect on gender equality,

with significance at the 5% (model specification 3) or 10% (model specification 4) level. The proportion of female employment in all industries has a negative impact on gender equality, but this result is not statistically significant.

Table 5 shows that tourism also has a positive impact on gender equality in south Asian countries. A 1% increase in the logarithm of inbound tourist arrivals will increase the gender equality index by 0.0030%. However, this impact is much lower than that in east and southeast Asian countries. Similarly, the coefficient of the lag of GENDER is significantly positive at the 1% level, suggesting a dynamic persistence effect of gender equality.

After introducing control variables, the positive effect of tourism on gender equality in south Asian countries is still significant, but the statistical significance drops to the 5% (model specification 2) or 10% (model specifications 3 and 4) level. It is noteworthy that the effects of the control variables on gender equality are not statistically significant in this case. Table 6 also reports that tourism has a positive impact on gender equality in west and central Asian countries, at the significance level of 1%. A 1% increase in the logarithm of inbound tourist arrivals will increase the gender equality index by 0.0187%. Here, the coefficient of the lag of GENDER is also significantly positive at the 1% level, suggesting a dynamic persistence effect of gender equality.

Table 6 also clearly indicates that the positive effect of tourism on gender equality remains statistically significant after introducing the control variables. Similar to east and southeast Asian countries, GDP per capita has a significant negative effect on gender equality at the 5% level. In addition, we see the positive impact of the proportion of female employment in services on gender equality at a significance level of 5%. The statistics pertaining to the other variables do not emerge as statistically significant. The study found that tourism has a positive impact on gender equality in Asia, especially inbound tourism. This is because tourism can create more employment opportunities for women, increase their income, and give them more access to education and political rights. However, the negative impact of traditional Asian social cultures on gender equality is still prominent, particularly in west and central Asia and in some weak economies.

The study also found that economic growth does not necessarily promote gender equality. In fact, in east and southeast Asia, GDP per capita has a negative impact on gender equality. This is likely due to the unequal distribution of wealth, especially the amount of wealth owned by women.

The study also found that household education expenditure has a positive impact on gender equality, while the proportion of female employment in agriculture has a negative impact. This is because women who are more educated are more likely to have better job opportunities and more political rights. On the other hand, women who are employed in agriculture are often more likely to be stuck in low-paying jobs and have less access to education and other opportunities. The study concludes that tourism can play a positive role in promoting gender equality in Asia, but it is important to address the negative impact of traditional social cultures and ensure that the benefits of tourism are shared equitably between men and women.

Conclusion

This study used a dynamic panel data analysis technique to explore the impact of tourism on gender equality in Asia. The study found that tourism has a significant positive impact on gender equality in Asia, and this impact is also substantial in different regions. For example, in east and southeast Asia, a 1% increase in tourism arrivals is associated with a 0.02% increase in the gender equality index. However, the impact of the control variables on gender equality varies across the three regions. For example, in south Asian countries, the impact of these control variables on gender equality is not statistically significant. In the west and central Asia, the economy is found to have a significant negative impact on gender equality. In the east and southeast Asian countries, household education expenditure has a significant positive impact on gender equality. The study also found that there are some limitations to the current research. For example, the study uses the number of international tourist arrivals instead of tourism income to represent tourism. This may lead to a bias in the results. In addition, the study does not distinguish male from female education expenditure. Future research should focus on collecting better data to address these limitations.

References

1. Alarc n, D.o M., & Cole, S. (2019). No sustainability for tourism without gender equality. Journal of Sustainable Tourism, 27(7), 903–919.

2. Alrwajfah, M. M., Almeida-García, F., & Cort s-Macías, R.e (2020). Females ' perspectives on tourism 's impact and their employment in the sector: The case of Petra, Jordan. Tourism Management, 78, Article 104069.

3. Alsawafi, A. M. (2016). Exploring the challenges and perceptions of Al Rustaq College of Applied Sciences students towards Omani women's empowerment in the tourism sector. Tourism Management Perspectives, 20, 246–250.

4. Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The Review of Economic Studies, 58(2), 277–297.

5. Balli, E., Sigeze, C., Manga, M., Birdir, S. S., & Birdir, K. (2019). The relationship between tourism, CO2 emissions and economic growth: A case of Mediterranean countries. Asia Pacific Journal of Tourism Research, 24(3), 219–232.

6. Chowdhury, E. K. (2021). Financial accounting in the era of blockchain-a paradigm shift from double entry to triple entry system. Available at SSRN 3827591. http://dx.doi.org/10.2139/ssrn.3827591

7. Chowdhury, E. K., & Abedin, M. Z. (2020). COVID-19 effects on the US stock index returns: an event study approach. Available at SSRN 3611683. http://dx.doi.org/10.2139/ssrn.3611683

8. Chowdhury, E. K., Stasi. A. & Pellegrino. A. (2023). Blockchain Technology in Financial Accounting: Emerging Regulatory Issues. *Review of Economics and Finance*. 21 (1), 862-868. https://refpress.org/ref-vol21-a94/

9. Chowdhury, E, K., & Islam, A. (2017). Role of Foreign Direct Investment in the Stock Market Development of Bangladesh- A Cointegration and VAR Approach. *The Bangladesh Accountant*, April-June, 2017, 63-74. The Institute of Chartered Accountants of Bangladesh. https://tinyurl.com/y8hs2paf

10. Chowdhury, E. K (2021). Does Internal Control Influence Financial Performance of Commercial Banks? Evidence from Bangladesh. *South Asian Journal of Management*, 28(1), 59-77. https://tinyurl.com/59nr5axm

11. Chowdhury, E. K. (2012). Impact of inflation on bank lending rates in Bangladesh. Journal of Politics and Governance, 1(1), 5-14. https://tinyurl.com/26y2pw6y

12. Chowdhury, E. K. (2012). The Impact of Merger on Shareholders' Wealth. *International Journal of Applied Research in Business Administration and Economics*, 1(2), 27-32. https://tinyurl.com/ycxt59vz

13. Chowdhury, E. K. (2016). Investment Behavior: A Study on Working Women in Chittagong. *Premier Critical Perspective*, 2 (1). 95-109. http://digitalarchives.puc.ac.bd:8080/xmlui/handle/123456789/67

14. Chowdhury, E. K. (2017). Functioning of Fama-French Three- Factor Model in Emerging Stock Markets: An Empirical Study on Chittagong Stock Exchange, Bangladesh. *Journal of Financial Risk Management*, 6(4), 352-363. https://doi.org/10.4236/jfrm.2017.64025

15. Chowdhury, E. K. (2017). Measuring the Effect of Macroeconomic Variables on the Stock Market Return: Evidence from Chittagong Stock Exchange. *AU-International e-Journal of Interdisciplinary Research*, 2(2), 1-10. http://www.assumptionjournal.au.edu/index.php/eJIR/article/view/4227

16. Chowdhury, E. K. (2021). Prospects and challenges of using artificial intelligence in the audit process. In Abedin, M.Z., Hassan, M.K., Hajek, P. (eds.) *The Essentials of Machine Learning in Finance and Accounting* (pp. 139-155). Routledge. https://tinyurl.com/4stz7ycj

17. Chowdhury, E. K. (2022). Disastrous consequence of coronavirus pandemic on the earning capacity of individuals: an emerging economy perspective. *SN Bus Econ.* 2(153). https://doi.org/10.1007/s43546- 022-00333-z

18. Chowdhury, E. K., & Begum. R. (2012). Reward Management as Motivational Tool in Various Industries in Bangladesh: An empirical study. *International Journal of Contemporary Business Studies*, 3(11), 22-34. https://tinyurl.com/3vzu9cu8

19. Chowdhury, E. K., & Chowdhury, G. M. (2014). Applicability of Prediction Techniques in the Stock Market-A Chittagong Stock Exchange Perspective. *International Journal of

Advanced Information Science and Technology, 32(32), 126-136, DOI:10.15693/ijaist/2014.v3i12.124-134

20. Chowdhury, E. K., & Chowdhury, R. (2017). Online Shopping in Bangladesh: A Study on the Motivational Factors for Ecommerce that Influence Shopper's Affirmative Tendency towards Online Shopping. *South Asian Journal of Marketing & Management Research*, 7(4). 20-35. DOI:10.5958/2249-877X.2017.00019.4

21. Chowdhury, E. K., & Chowdhury, R. (2022). Empirical research on the relationship between renewable energy consumption, foreign direct investment and economic growth in South Asia. *Journal of Energy Markets*, *15*(2). 1-21, https://DOI:10.21314/JEM.2022.012

22. Chowdhury, E. K., & Chowdhury, R. (2023). Role of financial inclusion in human development: Evidence from Bangladesh, India and Pakistan. *Journal of the Knowledge Economy*, 1-26. https://doi.org/10.1007/s13132-023-01366-x

23. Chowdhury, E. K., & Nahar, S. (2017). Perceptions of Accountants toward Sustainability Development Practices in Bangladesh. *Journal of Management and Sustainability*,7(3), 112-119. doi:10.5539/jms.v7n3p112

24. Chowdhury, E. K., & Reza, T. (2013). Diagnostic Study on Interactive Ads and Its Response towards the FM Radio. *International Journal of Research in Commerce, IT & Management*, 3(2), 36-41. https://tinyurl.com/5n8huanv

25. Chowdhury, E. K., Dhar, B. K., & Stasi, A. (2022). Volatility of the US stock market and business strategy during COVID-19. *Business Strategy & Development*, 1–11. https://doi.org/10.1002/bsd2.203

26. Chowdhury, E. K., Dhar, B. K., Gazi, M., & Issa, A. (2022). Impact of Remittance on Economic Progress: Evidence from Low-Income Asian Frontier Countries. *Journal of the Knowledge Economy*, 1-26. https://doi.org/10.1007/s13132-022-00898-y

27. Chowdhury, E. K., Dhar, B. K., Thanakijsombat, T., & Stasi, A. (2022). Strategies to determine the determinants of financial performance of conventional and Islamic commercial banks: Evidence from Bangladesh. *Business Strategy & Development*, 1–19. https://doi.org/10.1002/bsd2.207

28. Chowdhury, E.K. (2018). An Assessment of Return Spillover Among Selected Stock Markets in SAARC Countries. *South Asian Journal of Management*, 25 (1), 51-63. Association of Management Development Institutions in South Asia. https://tinyurl.com/y2bd39tk

29. Chowdhury, E.K. (2018). Does Foreign Direct Investment Stimulate Economic Progress of a Developing Country? Empirical Evidence from Bangladesh. *CIU Journal*, 1 (1), 71-86. Chittagong Independent University. https://tinyurl.com/3scz3jzh

30. *Chowdhury, E.K. (2019). An Empirical Study of Volatility in Chittagong Stock Exchange.* *CIU Journal*, 2 (1), 19-38. Chittagong Independent University. https://tinyurl.com/3w6k89k8

31. *Chowdhury, E.K. (2019). Transformation of Business Model through Blockchain Technology. *The Cost and Management*, 47(5), 4-9. The Institute of Cost and Management Accountants of Bangladesh. https://tinyurl.com/bdz4ns7t

32. Chowdhury, E.K. (2020). Catastrophic Impact of Covid-19 on Tourism Sector in Bangladesh: An Event Study Approach. *The Cost and Management*, 48(4), 43-52. The Institute of Cost and Management Accountants of Bangladesh. https://tinyurl.com/ccu6mkbx

33. Chowdhury, E.K. (2020). Is Capital Market Integration among the SAARC Countries Feasible? An Empirical Study. *Eurasian Journal of Business and Economics*, 13(25), 21-36. https://doi.org/10.17015/ejbe.2020.025.02

34. Banerjee, S., & Chua, A. Y. (2020). How alluring is the online profile of tour guides? Annals of Tourism Research, 81, Article 102887.

35. Baum, C. F., Schaffer, M. E., & Stillman, S. (2002). Instrumental variables and GMM: Estimation and testing. The Stata Journal, 3(1), 1–31. https://doi.org/10.1007/ s10765-011-1105-9

36. Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics, 87(1), 115–143.

37. Blundell, R., & Bond, S. (1999). GMM estimation with persistent panel data: An application to production functions. Econometric Reviews, 19(3), 321–340.

38. Bond, S. (2002). Dynamic panel data models: A guide to micro data methods and practice. Portuguese Economic Journal, 1, 141–162.

39. Boonabaana, B. (2014). Negotiating gender and tourism work: Women's lived experiences in Uganda. Tourism and Hospitality Research, 14(1–2), 27–36.

40. Carvalho, I., Costa, C., Lykke, N., & Torres, A. (2019). Beyond the glass ceiling: Gendering tourism management. Annals of Tourism Research, 75, 79–91.

41. Carvalho, I., Costa, C., & Torres, A. (2019). Gender awareness and women managers in tourism: Perceptions of inequality and what could be done. In Handbook of research on women in management and the global labor market (pp. 218–238). IGI Global. https://doi.org/10.4018/978-1-5225-9171-9.ch011.

42. Channa, A. (2015). Education and international development: An introduction. Progress in Development Studies, 15(4), 387–389.

43. Chowdhury, E.K. (2020). Non-Performing Loans in Bangladesh: Bank Specific and Macroeconomic Effects. *Journal of Business Administration*, 41(2), 108-125. University of Dhaka. https://tinyurl.com/54f5pexw

44. Chowdhury, E.K. (2020). Volatility in Cryptocurrency Market–Before and During Covid-19 Pandemic. *CIU Journal*, 3(1), 69-86. Chittagong Independent University. https://tinyurl.com/mr3djzcn

45. Chowdhury, E.K. (2022). Strategic approach to analyze the effect of Covid-19 on the stock market volatility and uncertainty: a first and second wave perspective, *Journal of Capital Markets Studies*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JCMS-05-2022-0015

46. Chowdhury, E.K. (2023). Integration of Artificial Intelligence Technology in Management Accounting Information System: An Empirical Study. In: Abedin, M.Z., Hajek, P. (eds) Novel Financial Applications of Machine Learning and Deep Learning. International Series in Operations Research & Management Science, vol 336. Springer, Cham. https://doi.org/10.1007/978-3-031-18552-6_3

47. Chowdhury, E.K., & Rozario, S. O. (2018). Impact of Attitude and Awareness of Investors on their Investment Behavior- A Study on Bangladesh Stock Market. *The Bangladesh Accountant*, July- September, 81-89. The Institute of Chartered Accountants of Bangladesh. https://tinyurl.com/4av6swas

48. Chowdhury, EK (2020). India's NRC, CAA may take Bangladesh closer to China. *Asian Regional Review*, Diverse Asia, Seoul National University Asia Center, 3(2). https://diverseasia.snu.ac.kr/?p=4525

49. Chowdhury, M.R.A., & Chowdhury, E. K. (2010). Estimation of Stock Market Risk-A Value at Risk Approach. *The Cost & Management*, 38(4), 22-27. https://tinyurl.com/4ax978ud

50. Chowdhury, M.R.A., Chowdhury, E. K., & Chowdhury, T. U. (2015). Application of Capital Asset Pricing Model: Empirical Evidences from Chittagong Stock Exchange. *The Cost & Management,* 43(3), 38-44. https://tinyurl.com/bddv24cy

51. Cohen, S. A., & Cohen, E. (2019). New directions in the sociology of tourism. Current Issues in Tourism, 22(2), 153–172.

52. Cole, S. (2018). Gender equality and tourism: Beyond empowerment. Wallingford, UK and Boston: CABI.

53. Damjanovic, T., & Selvaretnam, G. (2020). Economic growth and evolution of gender equality. The Manchester School, 88(2), 1–20.

54. Duffy, L. N., Kline, C. S., Mowatt, R. A., & Chancellor, H. C. (2015). Women in tourism: Shifting gender ideology in the DR. Annals of Tourism Research, 52, 72–86. Farmaki, A. (2019). Women in Airbnb: A neglected perspective. Current Issues in Tourism. https://doi.org/10.1080/12083500.2019.1674257

55. Ferguson, L. (2011). Promoting gender equality and empowering women? Tourism and the third millennium development goal. Current Issues in Tourism, 14(3), 235–249.

56. Ferguson, L., & Alarcon, D. M. (2015). Gender and sustainable tourism: Reflections on theory and practice. Journal of Sustainable Tourism, 23(3), 401–416.

57. Ferragina, E. (2020). Family policy and women 's employment outcomes in 45 high-income countries: A systematic qualitative review of 238 comparative and national studies. Social Policy and Administration. https://doi.org/10.1111/spol.12584

58. Figueroa-Domecq, C., Palomo, J., Flecha-Barrio, M. D., & Segovia-P rez, M.e (2019). Double gender gap in tourism high-technology organisations: Results and
59. corporate actions. In J. Pesonen, & J. Neidhardt (Eds.), Information and communication Technologies in Tourism 2019 (pp. 383–395). Cham: Springer. https://doi. org/10.1007/978-3-030-05940-8_30.

60. Figueroa-Domecq, C., Pritchard, A., Segovia-P rez, M.,e Morgan, N., & Villace-Molinero, T. (2015). Tourism gender research: A critical accounting. Annals of Tourism Research, 52, 87–103.

61. Font, X., Garay, L., & Jones, S. (2016). Sustainability motivations and practices in small tourism enterprises in European protected areas. Journal of Cleaner Production, 137, 1439–1448.

62. Fulu, E., & Miedema, S. (2016). Globalization and changing family relations: Family violence and women 's resistance in Asian Muslim societies. Sex Roles, 74, 480–494. https://doi.org/10.1007/s11199-015-0540-7

63. Gil Arroyo, C., Barbieri, C., Sotomayor, S., & Knollenberg, W. (2019). Cultivating Women's empowerment through Agritourism: Evidence from Andean communities. Sustainability, 11(11), 3058.

64. Hakimi, A., & Inglesi-Lotz, R. (2020). Examining the differences in the impact of climate change on innovation between developed and developing countries:

Evidence from a panel system GMM analysis. Applied Economics, 52(22), 2353–2205.

65. Kattara, H. S. (2005). Career challenges for female managers in Egyptian hotels. International Journal of Contemporary Hospitality Management, 17(3), 238–251.

66. Kelkar, G. (2005). Development effectiveness through gender mainstreaming: Gender equality and poverty reduction in South Asia. Economic and Political Weekly, 4690–4699.

67. Kimbu, A. N., Ngoasong, M. Z., Adeola, O., & Afenyo-Agbe, E. (2019). Collaborative networks for sustainable human capital management in women's tourism entrepreneurship: The role of tourism policy. Tourism Planning & Development, 16(2), 161–178.

68. Lee, J. W., & Brahmasrene, T. (2013). Investigating the influence of tourism on economic growth and carbon emissions: Evidence from panel analysis of the European union. Tourism Management, 38, 69–76.

69. Lenao, M., & Basupi, B. (2016). Ecotourism development and female empowerment in Botswana: A review. Tourism Management Perspectives, 18, 51–58.

70. Litwin, A., Ngan, H. F. B., & Atembe, R. (2019). Attitudes towards female managers in Austrian and Macau tourism industry. Journal of Hospitality and Tourism Management, 39, 1–8.

71. Masadeh, M., Al-Ababneh, M., Al-Sabi, S., & Allah, M. H. (2018). Female tourist guides in Jordan: Why so few? European Journal of Social Sciences, 56(2), 89–102.

72. Nassani, A. A., Aldakhil, A. M., Abro, M. M. Q., Islam, T., & Zaman, K. (2019). The impact of tourism and finance on women empowerment. Journal of Policy Modeling, 41(2), 234–254.

73. Nomnga, V. J. (2017). Unlocking the potential of women entrepreneurs in the tourism and hospitality industry in the eastern Cape Province, South Africa. Journal of Economics and Behavioral Studies, 9(4), 6–13.

74. Nyaruwata, S., & Nyaruwata, L. T. (2013). Gender equity and executive management in tourism: Challenges in the Southern African Development Community (SADC) region. African Journal of Business Management, 7(21), 2059.

75. Paramati, S. R., Alam, M. S., & Chen, C. F. (2017). The effects of tourism on economic growth and CO2 emissions: A comparison between developed and developing economies. Journal of Travel Research, 56(6), 712–724.

76. Phommavong, S., & S rensson, E.o (2014). Ethnic tourism in Lao PDR: Gendered divisions of labour in community-based tourism for poverty reduction. Current Issues in Tourism, 17(4), 350–202.

77. Pritchard, A. (2007). Tourism and gender: Embodiment, sensuality and experience. CAB international.

78. Rinaldi, A., & Salerno, I. (2019). The tourism gender gap and its potential impact on the development of the emerging countries. Quality & Quantity. https://doi.org/10.1007/s11135-019-00881-x

79. Romo, R. S., Gabriel, L. P., & Soares, J. R. (2019). Gender equality in access to Management in the tourism industry. In D. Tüzünkan, & V. Altıntaş (Eds.), Contemporary human resources Management in the Tourism Industry (pp. 85–103). Hershey, PA: IGI Global. https://doi.org/10.4018/978-1-5225-5760-9.ch004.

80. Roudi, S., Arasli, H., & Akadiri, S. S. (2019). New insights into an old issue – Examining the influence of tourism on economic growth: Evidence from selected small island developing states. Current Issues in Tourism, 22(11), 1280–1300.