Dr Freeman Munisi Mateko

freemanm@uj.ac.za / matekofreeman90@gmail.com

DST/ NRF South African Research Chair in Industrial Development (SARChI-ID), University of Johannnesburg, South Africa

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The nexus between structural transformation and poverty alleviation in South Asian Association for Regional Cooperation (SAARC). A sectoral value-added analysis

ABSTRACT

How does structural transformation contribute to poverty reduction within a trading bloc? The central aim of the study is to examine the nexus between structural transformation and poverty alleviation in the SAARC. Other objectives of the study are to preview and describe the trends of the manufacturing, service, and agricultural sectors of the SAARC region. The research employed a panel autoregressive distributed lag model and used data from the World Bank for the period 1985–2022. In the short term, both the service and manufacturing sectors contributed to rising poverty levels. However, in the long term, it was found that these sectors play a crucial role in reducing poverty. SAARC member states should implement targeted policies that encourage sectoral growth, skill development, and regional integration in order to achieve high levels of industrialization and eliminate poverty.

Keywords: economic growth; economic development; industrial development; poverty; structural transformation; sustainable development goals.

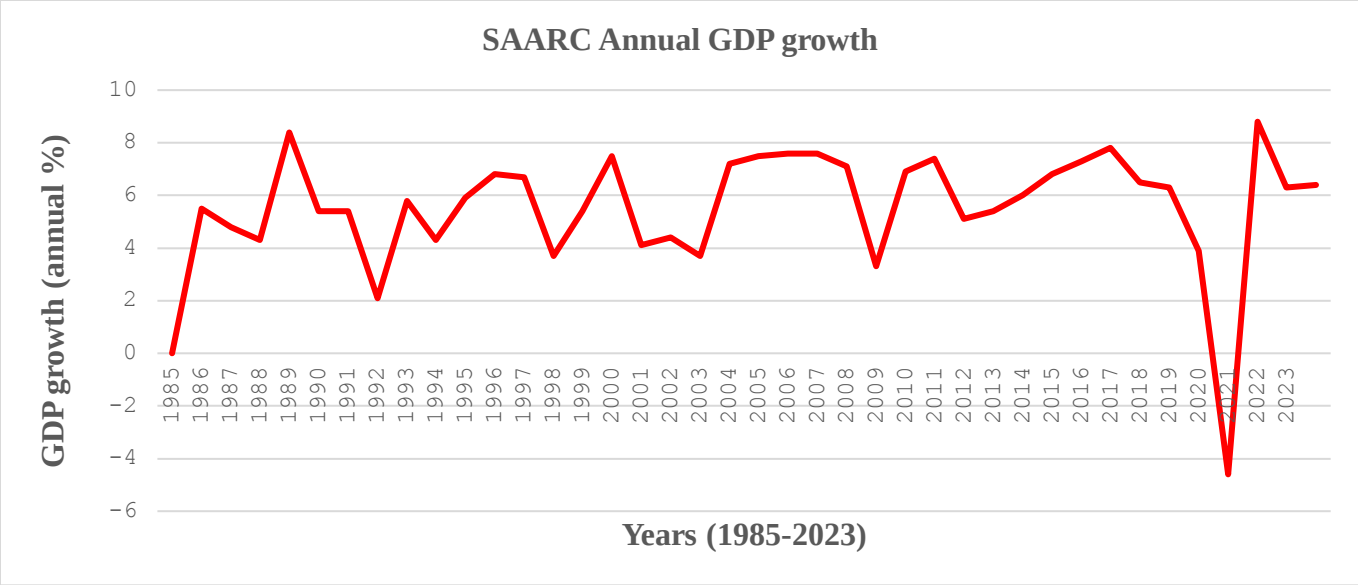
INTRODUCTION

A staggering 36% of the world's poor live in the South Asian Association for Regional Cooperation (SAARC), which also suffers from low levels of industrialization (Dutt, 2023; Kumar & Chatterjee, 2023). The central aim of the study is to examine the nexus between structural transformation and poverty alleviation in the SAARC. Other objectives of the study are to preview and describe the trends of the manufacturing, service, and agricultural sectors of the SAARC region. The South Asian Association for Regional Cooperation (SAARC) is a trading bloc that was formed in 1985 with the sole purpose of promoting economic growth, improving quality of life, and strengthening regional ties between its member states, which are: Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka. The region seems to be failing to meet its goal of achieving high levels of economic growth despite being in existence for more than three decades.

Poverty is an intricate problem that includes a lack of access to education, healthcare, water, and sanitation, among other things (Zulkifli & Abidin, 2023). High poverty levels affect SAARC at large. In 2021, India was the most severe poor country in the SAARC, with 239 million people, accounting for around 28% of the world's extreme poor. Bangladesh had the second-highest number of international severe poor in South Asia (27 million), with Pakistan coming in third at 10 million (Islam et al., 2021). These statistics show the extent of poverty in the SAARC region.

SAARC member states also suffer from low levels of industrialization. For example, Pakistan has one of the slowest and lowest rates of structural development in Asia (Tasneem & Aamir Khan, 2024). These low levels of industrialization in the region at large have led to poor levels in Gross Domestic Product (GDP), as shown by Figure 1 below**:**

Figure 1: SAARC Annual GDP Growth



Source: Researcher; s Construct based on World Bank data 2024

Figure 1 shows that the annual GDP growth for SAARC has been characterized by acute fluctuations from 1985 to 2018. This was caused by economic challenges, political instability, which affected other member states such as Afghanistan, natural disasters that affected India and Bangladesh, as well as global challenges such as the global financial crisis and the Asian financial crisis (Shah & Romaniuk, 2023; Tamuly & Mukhopadhyay, 2022; Wang et al., 2022). Key to note is the decline in annual GDP levels in 2019 from 6.3% to -4.6% in 2021. The main causes were the COVID-19 pandemic, decline in exports, and reduced aggregate demand due to loss of income that emanated from job losses (Selvaraj & Jegadeeshwaran, 2022). From the end of 2021, there was a sharp increase in GDP levels to 8.8% and later dropped to 6.4%. Overall, the GDP levels have been low and fluctuating, which also signals poor performance of the SAARC industrial sector. Structural transformation is the process by which an economy moves from low productivity and labor-intensive economic activity to higher productivity and skill-intensive ones (Andreoni et al., 2021; Tasneem & Aamir Khan, 2024). It is very crucial for industrialization, and the relationship between the two can be bidirectional. Structural transformation can drive industrialization by expanding markets; as economies diversify and income levels grow, so does demand for industrial goods, creating a conducive atmosphere for industrialization (Chung, 2018). On the other hand, industrialization has the potential to generate structural transformation by increasing productivity, reducing dependency on agriculture, and promoting growth in other

sectors, particularly services (Mazungunye, 2019). This is also backed by improvements (Samouel and Aram 2016)., who stated that East and Southeast Asian countries, as well as numerous Latin American countries, have achieved incredible economic growth, which is primarily due to industrial strategy changes.

Structural transformation is a key driver for poverty reduction. For example, Vietnam's structural transformation between 2000 and 2020 led to the country's GDP growing at an average rate of 6.5% per annum, while the poverty rate declined from 29.9% in 2002 to 0.6% in 2020 (UNDP, 2024). Industrial development contributed significantly to economic growth, employment creation, and poverty reduction in nations such as China, Taiwan, Korea, and Indonesia (Kniivila (2007). Poverty in China reduced from 71.96% in 1990 to 0.14% in 2019, whereas in Vietnam it decreased from 45.02% in 1992 to 1.23% in 2018 (World Bank, 2023).

The beneficial experiences of industrialized countries with industrial growth suggest that emerging countries should focus on building effective policies for encouraging industrial development in order to achieve rapid economic development and poverty reduction, as well as the possibility of attaining some of the Sustainable Development Goals (Islam et al., 2021). Given this positive link between industrialization and its effect on poverty reduction in a non-deterministic manner (via economic growth proceeds channeled towards the poor), it is essential to examine the relationship between structural transformation and poverty in the SAARC.

Although other scholars (He et al., 2024; Klasen & Waibel, 2015; Rao et al., 2024; Ridwan et al., 2024; Kumar & Chatterjee, 2023) examined aspects related to this subject matter, to the best of the researcher's knowledge, no study has examined this link between structural transformation and poverty alleviation in SAARC using a unique time frame of 1990-2022. The novelty of the study therefore lies in giving new insights from South Asia about how structural transformation can be used to reduce poverty. Finally, this study is also important because the SAARC region only has eight countries, allowing for a worldwide and manageable analysis of the subject matter.

The rest of this paper is structured as follows: Section 2 will present both a theoretical and empirical literature review. The research methodology will be presented under Section 3. Section 4 presents the results and discussion. Policy recommendations and conclusions will be presented under sections 5 and 6, respectively.

2. REVIEW OF RELATED LITERATURE

This section presents both a theoretical and empirical literature review. The study uses Rostow's Stages of Economic Growth under the theoretical section. The empirical literature review will provide a discussion of diverse scholarly literature on the role of the manufacturing, service, and agriculture sectors in poverty reduction**.**

2.1 Theoretical literature review

2.1.1. Rostow's Stages of Economic Growth

This theory, introduced by Walt Rostow in 1960, describes five distinct stages through which economies progress, from traditional communities to high mass consumerism (Rostow 1960). Rostow proposed a five-stage linear model of economic development that includes traditional society, preconditions for take-off, take-off, drive to maturity, and the age of mass consumption (Rostow, 1960).

The traditional society is characterized by subsistence agriculture and limited technology, whereas the take-off stage entails the development of infrastructure and investment in key sectors, laying the groundwork for economic growth (Kesgingöz & Dilek, 2016; Thaha & Galib, 2022). The takeoff stage is a time of fast industrial growth, where manufacturing begins to dominate the economy, whereas the drive to maturity stages is when the economy diversifies and technology breakthroughs drive long-term growth (Willis, 2023; Murda et al., 2020). The final stage is high mass consumption, in which the economy moves to consumer products and services, resulting in a high standard of living (Galib, 2024).

This theory was employed in this study because Rostow emphasizes the relevance of economic growth and the shift from traditional to modern economies, highlighting the role of industrialization and structural transformation in an economy. By defining stages such as "take-off," the idea promotes investment in infrastructure and technology, supporting a proactive approach to economic growth and development. This also indicates that the theory emphasizes the importance of efficiency because technology is efficient; consequently, the theory encourages structural transformation because resources may be transferred from low-productivity areas to highly productive sections of the economy, which ultimately leads to higher levels of economic growth, and the proceeds thereof can be channeled towards poverty reduction through social

security and other poverty reduction initiatives (Novotná et al., 2021). This transition is also very critical for SAARC, which has low levels of industrialization.

2.2 Analysis of related literature

This section provides a discussion focusing on the role of the manufacturing, service and agriculture sector on poverty reduction.

2.2.1 Linkages between manufacturing sector and poverty reduction

The manufacturing sector has traditionally been related to quick poverty reduction through job growth, as it frequently pays higher salaries than agriculture (Amirapu et al., 2015). This shows a positive effect of the manufacturing sector on poverty alleviation. However, it must also be noted that although this position by Amirapu et al. (2015) is true, in some instances the higher wages paid may not be sufficient to cover the basic costs of living; hence, some people may be employed but poor. Furthermore, the manufacturing sector confronts problems such as skill mismatches and a move to service-oriented economies, which may limit its efficiency in poverty reduction in some emerging nations (Amirapu & Subramanian, 2015).

In Pakistan, it was discovered that structural shift toward industrial sectors had a favorable and considerable impact on Pakistan's real GDP, and the manufacturing sector's growth was largely concentrated in the textile and food and beverage sectors, which accounted for about 45% of total output (Tasneem & Aamir Khan, 2024). Given this position, the government of Pakistan can only have a guaranteed poverty reduction if the proceeds from high GDP are channeled towards the poor in a sustainable way.

However, although structural transformation can lead to reduced poverty, income inequality may occur in the process, as in the case of Indonesia (UNDP 2024). This income inequality may further affect the low-income earners in terms of access to education and health facilities, and this can further perpetuate poverty unless measures are put in place to curb that.

A poorly developed manufacturing sector may not offer many jobs to people, and as such, this also limits the ultimate effect on poverty reduction. Dhungel & Lamichhane (2021) agree with this sentiment and mentioned that Nepal had a poorly developed manufacturing sector. This also may mean that such a sector will be constrained to produce more output that can be used for local and

export purposes. Hence the sector will be constrained to have a non-deterministic power to reduce poverty as economic growth will be low as well as the salaries paid may be low too.

2.22 Linkages between agricultural sector and poverty reduction

South Asia is host to almost 300 million poor people, the bulk of whom live in rural areas and work in agriculture (Takeshima, 2021). The agricultural sector is essential for the provision of food and job creation (World Bank, 2024a). In India, the Wadi idea, an integrated agricultural system that includes water resource development, soil protection, fruit tree production, and intercropping on degraded land, has been shown to increase income and reduce poverty (Nienkerke et al., 2024).

However, overreliance on this sector can lead to low wages, especially if there is abundant labor supply. In 2020, Bhutan's 57.2% of the total population were dependent on agriculture for survival (Lakey, 2020). This may signal the inability of people to be active in the manufacturing or service sectors of the economy. Overdependence on the agriculture sector poses poverty risks. UNDP (2023) concurs with this sentiment and mentioned that Bhutan is prone to climate risks due to some of the agricultural practices used. Based on this analysis, it can be concluded that the agricultural sector can have positive or negative effects on poverty.

2.2. 3 Linkages between service sector and poverty reduction

Good performance in the service sector can lead to expansion of service sector businesses and employment creation, which ultimately helps in poverty reduction as people get incomes. (Hasan & Hoque, 2024) affirm with the above assertion, and they established that expanding the service industry in Bangladesh had a beneficial impact on its per capita income (PCI) growth rate.

In Bangladesh, it was discovered that there is a positive association between banking services and poverty alleviation, with evidence that the relationship operates through the deposit channel (Iqbal et al., 2020). However, this transmission mechanism may work only in areas where there are banking services and to those with bank accounts. Thus, people excluded from banking services may remain poverty-stricken.

However, in Pakistan, expansion in community services and transportation has shown a strong short-term influence on poverty reduction, whereas the finance and insurance sectors have been associated with increasing poverty conditions (Fatima, 2014). This shows that the effect of the

service sector on poverty reduction can either be positive or negative, and this can be influenced by diverse factors such as economic policies used, the degree of social inclusion, as well as the rate of technological change.

The literature discussed indicates that the manufacturing sector contributes significantly to poverty reduction by creating higher-wage jobs than agriculture. However, this sector's effectiveness is restricted by reasons such as low pay, skill mismatches, and a shift toward service-oriented economies. On the other hand, the agricultural sector is critical to poverty reduction in South Asia, providing food and jobs for millions of people. However, issues such as climate change, access to technology, and policy can all influence the sector's success in poverty reduction. Finally, despite its complexity and influence by different socioeconomic conditions, the service sector can greatly contribute to poverty reduction by creating jobs and generating revenue**.**

3. METHODOLOGY

The methodology section illustrates how structural transformation and poverty reduction are linked, drawing on arguments from the Rostow's Stages of Economic Growth model. The variables used are briefly discussed, and an econometric model is provided. The Human Development Index was used to measure the dependent variable, poverty. This measure is valuable for comparing poverty levels between countries, and hence it contributes to this analysis, which focuses on the SAARC region (Smit, 2016; United Nations Development Programme, 2019).

The index is beneficial for quantifying poverty because it considers factors including income, education, and health (Morse, 2023). When it comes to quantifying poverty, HDI gives credible estimates for econometric analysis (Bejar, 2021; Korankye et al, 2020). Furthermore, one of the most reliable measurements of poverty is the multidimensional poverty index, which incorporates the HDI's health and education components (United Nations Development Programme, 2022; Vollmer & Alkire, 2022). Finally, the HDI can be used to study long-term poverty trends, which can help guide policy formation (Sulistiani & Najmudin, 2023).

Structural transformation can be measured using the sectoral contribution to GDP (United Nations, 2016). This study used a sectoral analysis technique with three independent variables: agricultural value added (AVA), manufacturing value added (MVA), and service value added (SVA). These variables were included in the study because (Enongene, 2022; Habanabakize & Dickason-

Koekemoer, 2023; Rifa'i & Listiono, 2021; Erumban & De Vries, 2021; Karahasan, 2023; Matenga & Mpofu, 2023) asserted that they had an impact on poverty alleviation. Their inclusion in this study is based on the research's goal of investigating the relationship between structural transformation and poverty in the SAARC area.

3.1 ECONOMETRIC MODEL

To examine the relationship between structural transformation and poverty alleviation in South Asian Association for Regional Cooperation, the study used the panel autoregressive distributed lag model (PARDL), which was developed by Pesaran and Smith in 1995.

This model was chosen because it can estimate both short- and long-term dynamic parameters and is widely used in econometric analysis (Mamvura & Sibanda, 2020; Nkoro & Uko, 2016; Shin et al., 2014; Kripfganz & Schneider, 2016; Udoh et al., 2015). PARDL was utilized in the study since it has been shown to lessen the likelihood of spurious regression. The PARDL applies when the variables have a mixed order of integration that is divided into orders 1 and 0. PARDL is useful for research with a limited sample size, and this study has a 32-year sample period (Kripfganz and Schneider, 2016; Negara et al., 2021).

The general model is presented below:

$$\Delta Y_{i,t} = \alpha_1 + \sum_{i=1}^{p} \beta_i \Delta Y_{i,t-i} + \sum_{i=0}^{q} \delta_i \Delta X_{i,t-i} + \varphi_1 Y_{i,t-1} + \varphi_2 X_{i,t-1} + \varepsilon_{it} \quad (1)$$

Where $\Delta \boldsymbol{Y_{it}}$ represents a vector of (kx1) representing poverty measured through HDI, Δ captures differences in operator, $\boldsymbol{X_1}$, $\boldsymbol{y_1}$ are the independent variables for every i = 1 which were AVA, MVA, and SVA.

$\boldsymbol{\beta_i}$ and $\boldsymbol{\delta_i}$ represents the short-run coefficients of the model explaining the short-run relationships between the variables, $\boldsymbol{\varphi_1}$, $\boldsymbol{\varphi_2}$ represents the long-run relationship, p and q represents the lags of the dependent variable and the independent variables respectively and $\boldsymbol{\varepsilon_{it}}$ is the error term.

Summary of dataset

Data were sourced from the World Bank from 1990 to 2022. Afghanistan, Maldives and Bhutan were excluded from the econometric analysis due to data unavailability. The variable column

shows each variable, followed by the indicator used and the description of the variable. The last column shows the data source for each variable used in the research.

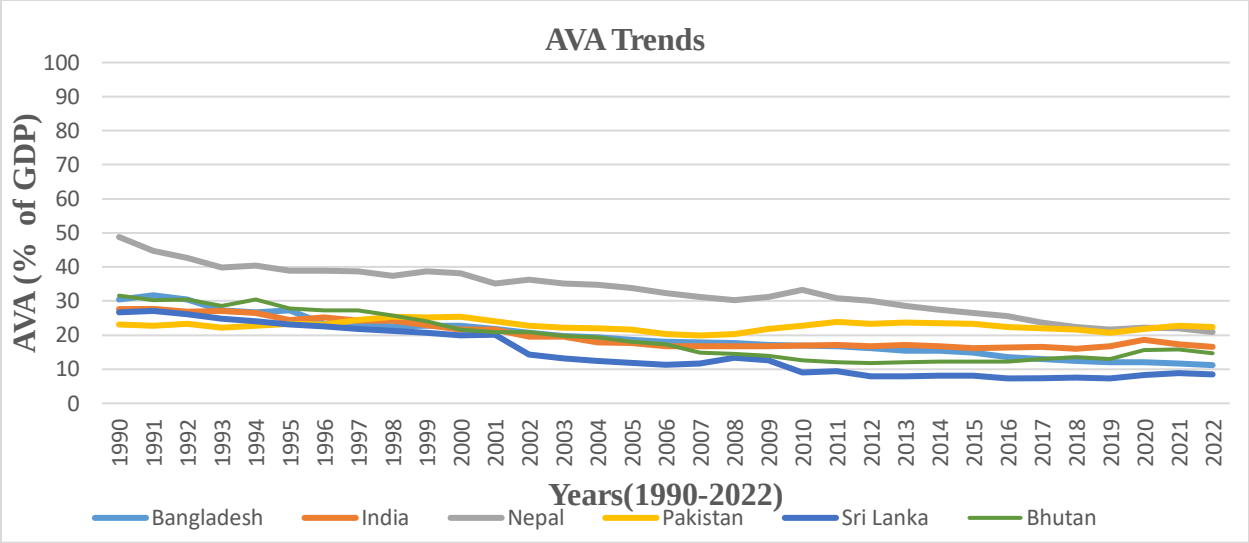
Variable	Indicator	Variable description	Data source
Poverty (PO)	Human development index	The absence of opportunities, coupled with high levels of undernourishment, hunger, illiteracy levels, lack of access to education, physical and mental diseases, and socio-economic instability	World Bank (2024)
Agricultural Value Added (AVA)	Percentage of GDP	Value added is the net output of the agricultural sector after adding up all outputs and subtracting intermediate inputs.	World Bank (2024)
Manufacturing Value Added (MVA)	Percentage of GDP	Value added is the net output of the manufacturing sector after adding up all outputs and subtracting intermediate inputs.	World Bank (2024)
Service Value Added (SVA)	Percentage of GDP	Value added is the net output of the service sector after adding up all outputs and subtracting intermediate inputs. It include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties.	World Bank (2024)

4. RESULTS AND DISCUSSION

Descriptive statistics

The results presented below are for the agricultural sector, the manufacturing sector, the industrial sector, and the services sector. Afghanistan and Maldives were excluded in the descriptive analysis due to data unavailability. Period 1 refers to the years 1990–2000; period 2: 2001–2010; and period 3: 2011–2022.

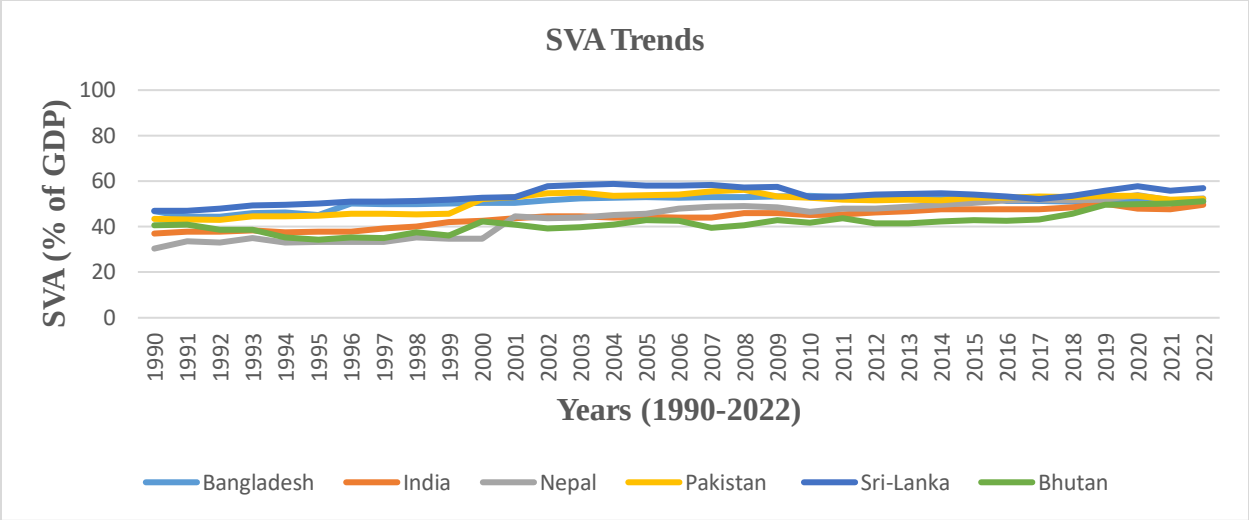
Figure 1: AVA trends



Source: Researcher's Calculation based on World Bank data (2024)

Figure 1 shows that in period 1, there was a stead decline in AVA for Bangladesh, India, Pakistan, Sri Lanka, and Bhutan from an estimated 30% to about 19% of the GDP. Nepal recorded a sharp increase from 48.8% to 35% of GDP. In period 2, there was further decline in AVA, though Sri Lanka suffered a major drop from 19.9% to 12.7% of GDP. In period 3, all the economies recorded a further decline in AVA, which was characterized by minor fluctuations. Overall, the decline in AVA in the SAARC is caused by multiple factors such as climate change effects, global competition from developed economies that affects prices of agricultural products, and a lack of access to modern technology that improves efficiency (Dissanayaka & Thibbotuwana, 2021; Prakash, 2024).

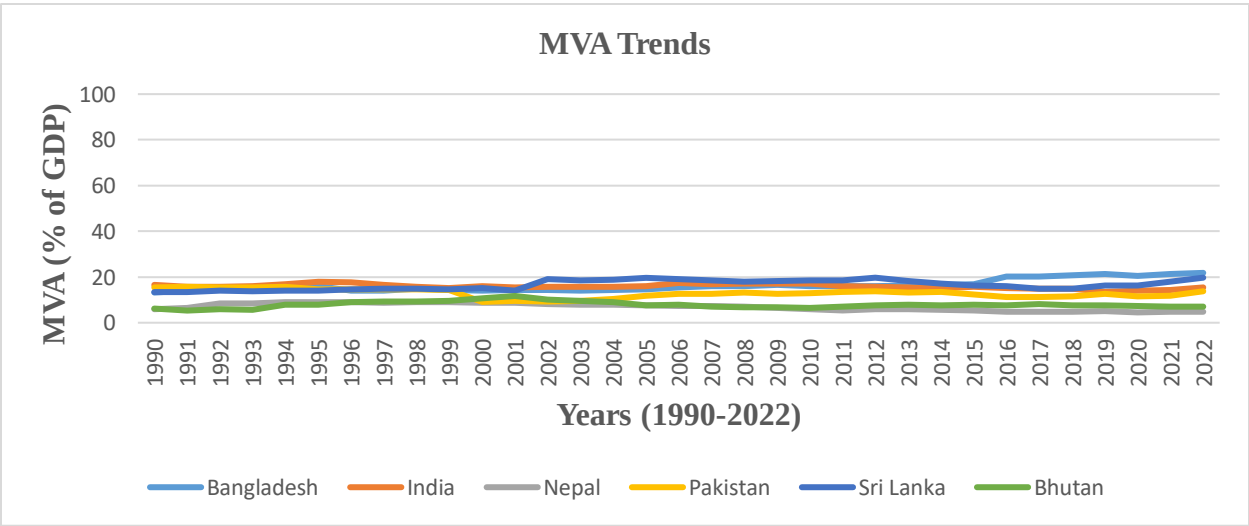
Figure 2: SVA trends



Source: Researcher's Calculation based on World Bank data (2024)

Figure 2 shows that in period 1, all six economies recorded an almost stagnant trend in SVA, though there were minor fluctuations. In period 2, there was a slight increase in SVA, though all countries were below 50%. In period 3, the SVA levels were constant. For the period 1990–2022, the SAARC member states had SVA levels below 60% of GDP. One important observation to make is that the AVA sector of the SAARC recorded a decline while the SVA sector recorded better performance. This can be attributed to the shift of the economies from the agricultural sector to the service sector, lack of investment, poor infrastructure, and labor market inefficiencies. (Dahal, 2018; Nayak et al., 2022).

Figure 3: MVA trends



Source: Researcher's Calculation based on World Bank data (2024)

The MVA sector of the SAARC recorded almost constant growth in MVA in period, as shown above in figure 1. A similar trend continued in periods 2 and 3, though there were minor fluctuations. It can be concluded that from 1990–2022, the SAARC had very low performance in the manufacturing sector, which was below 25% of GDP. This may be attributed to a lack of diversification, a huge informal sector, and poor logistics (Lopez-Acevedo & Robertson, 2016; Raihan & Sunera, 2022).

This section presents the descriptive statistics.

Table 2: Descriptive statistics

Variable	HDI	AVA	SVA	MVA
Mean	0.56	19.22	49.75	15.39
Median	0.50	20.40	51.15	15.30
Maximum	0.80	31.70	58.80	21.80
Minimum	0.40	7.30	37.00	9.10

Table 2 shows the SAARC region's Human Development Index (HDI), which has a mean of 0.56, a median of 0.5, a maximum of 0.8, and a minimum of 0.4. These numbers show low HDI levels, implying significant poverty rates. Overall, the region has low HDI levels, implying high poverty levels. The average agricultural value added (AVA) was 19.22%, the median was 20.40%, with a maximum of 31.70% and a minimum of 7.30%. This demonstrates the poor performance of the agricultural industry in the SAARC region. The service value added (SVA) averaged 49.75%, with a median of 51.15%, a maximum of 58.80%, and a low of 37%. Between 1990 and 2022, the SVA sector had somewhat greater values than the AVA sector on average. Meanwhile, the manufacturing value added (MVA) sector had a mean of 15.39%, a median of 15.30%, a high of 21.80%, and a low of 9.10%. This suggests that the MVA sector underperforms in comparison to the SVA sector.

Correlation analysis

This section presents the correlation analysis.

Table 3: Correlation analysis

Variables	HDI	AVA	SVA	MVA
HDI	1.00			
AVA	-0.79	1.00		

SVA	0.54	-0.57	1.00	
MVA	0.45	-0.59	0.06	1.00

Table 3 shows the findings of the correlation analysis. The Human Development Index (HDI) indicated a 79% negative connection with agricultural value added (AVA). In contrast, HDI demonstrated positive associations with service value added (SVA) and manufacturing value added (MVA) at 54% and 45%, respectively. AVA has a negative connection with value added (VA) of 57% and 59%. In addition, SVA had a 6% favorable association with MVA. Overall, these findings show that there was no substantial multicollinearity, since all correlations were less than 0.8 (Duda, 2022; Shrestha, 2020).

Unit root tests

The Augmented Dickey-Fuller test and Phillips-Perron test were used to test for unit root in the research. These tests are useful to avoid spurious regression (Wang & Hafner, 2018).

Table 4: Unit root test results

	ADF test		PP test	
Variable	**Level**	**1st Diff**	**Level**	**1st Diff**
HDI		**(52.09)** 0.00		**(84.41)** 0.00
AVA	**(14.29)** 0.00		**(78.25)** 0.00	
SVA		**(45.15)** 0.00		**(76.63)** 0.00
MVA		**(32.40)** 0.00		**(71.27)** 0.00

() represents t-statistics

Table 4 shows that HDI, SVA and MVA were stationary after the first difference. AVA was stationary at level. The above results suffice the condition of running a Panel Autoregressive Distributed Lag Model because the dependent variable is stationary at first difference and the independent variables are stationary at level and first difference (Pesaran, 2008).

Lag length selection

The VAR model was used to determine the optimal lag length in this study.

Table 5: Lag Length results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-616.99	NA	2.91	12.41	12.52	12.46

1	165.90	857.07*	0.0048*	3.71*	4.23*	3.92*

The Akaike criterion was used for decision-making purposes on the appropriate lag length. Table 5 shows that Lag 1 was selected because it had the lowest Akaike information criterion (AIC) value of 3.71.

COINTERGRATION TEST

To test for cointegration in this research a Johansen cointegration test was employed. The results are presented below.

Table 6: Johansen cointegration test

Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	63.79	0.00	61.09	0.00***
At most 1	15.16	0.05	7.5	0.48
At most 2	13.88	0.08	9.22	0.32
At most 3	18.89	0.01	18.89	0.01***

***, ** and * stand for significance at the 1%, 5% and 10% levels, respectively

Table 6 shows that at none, the p-value is less than 5%, thus the null hypothesis is rejected. For equations 1 and 2, the p-values are greater than 5%. For equation 3, the p -value was below the 5% level. There are at most two cointegrating equations in the study. It can be concluded that there is a long-term relationship between the variables used in the study, which were AVA, SVA and MVA. Finally, because the variables employed in the study have a long-run relationship, both short-run and long-run dynamics will be estimated.

Short-run Auto Regressive Distributed Lag Model Results.

This section presents the short- run results of the Panel Auto Regressive Distributed Lag model.

Table 8: Short-run PARDL Results

Variable	Coefficient	T-statistic	Probability
ECT (-1)	-0.26	-2.93	0.00***
SVA	-0.04	-2.33	0.02**
MVA	-0.05	-1.81	0.07*

Table 8 shows that in the short term, the error correction term (ECT) was used to confirm variable cointegration. The results revealed that cointegration exists for all equations, with the ECT being negative and significant in each equation. SVA and MVA were statistically significant at 5% and 10%, respectively. A 1% increase in SVA leads to a 4% decrease in HDI levels in the SAARC in the short run. This implies that increased performance of the service sector leads to an increase in poverty levels in the short run. This may be explained by the fact that the increased efficiency and productivity in SVA can be due to increased employment of part-time or low-wage workers (Wu et al., 2023). When such workers are not hired, they will be exposed to poverty as they will not be earning an income. Skill mismatch can also explain why growing SVA contributes to poverty, since the services industry may need skills that the present workforce lacks, resulting in unemployment or underemployment among less skilled individuals, exacerbating poverty (Ur-Rehman et al., 2021). Lastly, adoption of modern technology in SVA can improve efficiency, though it leads to job losses; hence, the retrenched workers become exposed to poverty.

For MVA, a 1% increase leads to a 5% decrease in HDI levels, implying that poverty increases in the SAARC region in the short run. This might be due to the fact that as production gets more efficient, automation and technology can replace low-skilled labor (Yoon, 2023). As productivity grows, those who lose their jobs might be unable to find new work, contributing to higher poverty rates. Aside from that, manufacturing expansion can cause degradation of the environment, disproportionately affecting low-income neighborhoods (Julius et al., 2023). An unhealthy environment can have an impact on health, limiting people's ability to work and raising poverty rates.

Table 9: Long-run PARDL Results

Variable	Coefficient	T-statistic	Probability
SVA	0.02	4.72	0.00***
MVA	0.01	2.03	0.04**

***, ** and * stand for significance at the 1%, 5% and 10% levels, respectively

Table 9 shows that SVA and MVA were statistically significant at 1% and 5%, respectively. In the long run, a 1% increase in SVA leads to a 2% increase in HDI levels in the SAARC region. An increase in HDI levels implies a decrease in poverty levels. This can be explained by the fact that

when the SVA sector grows, jobs are produced, which helps to alleviate unemployment and poverty (Jules et al., 2021). People who work earn money, which can help them afford food, education, and healthcare, among other things. Finally, the service sector frequently employs a large number of women, which can contribute to enhanced economic empowerment, higher household incomes, and improved social standing, all of which help to reduce poverty (Lone Christiansen et al., 2016).

For MVA, a 1% increase leads to a 1% increase in HDI levels in the long run in the SAARC region. This result shows that the manufacturing sector is useful for poverty alleviation among the SAARC member states. This result can be explained from the viewpoint that efficient manufacturing can expand, resulting in job creation and a higher standard of living. Furthermore, when the manufacturing sector grows, it can support the development of local supply chains, benefiting allied businesses (such as logistics and services) and creating new jobs in those areas (Handoyo et al., 2023).

It can therefore be concluded that the South Asian Association for Regional Cooperation needs to prioritize the development of the service and manufacturing sectors for efficient poverty reduction. This is essential for **job creation, economic growth, and economic development for the region at large.**

Post estimation tests

This section presents the post estimation results.

Table 10: Post estimation tests

Type of Test	P-value
Normality test	0.18
White Heteroscedasticity Test	0.15
Breusch-Godfrey LM test	0.32

Table 10 shows that there was no heteroskedasticity or serial correlation, and the data was normally distributed. This is justified by the fact that the p-value of the White Heteroscedasticity Test of

0.15 was above the 5% level. The Breusch-Godfrey LM test of 0.32 was above 5%, and the normality test value of 0.18 was also above 5%.

5. POLICY RECOMMENDATIONS

It is essential for SAARC to address low levels of structural transformation. This will help the region to improve its chances of poverty reduction as well as other SDG goals. Also the SAARC may be able to attain its economic goals which are outlined in their charter. The following policy recommendations are suggested:

Promotion of sectoral growth

The SAARC region should prioritize policies that promote growth in the service and manufacturing sectors. This can be accomplished by providing incentives for firms, encouraging innovation, and investing in modern technology.

Supporting Supply chain

The SAARC region should invest in infrastructure and assist local supply chains in the manufacturing sector to increase job generation and efficiency. Policies should support collaboration between manufacturers and related industries in order to boost economic growth.

Promote regional cooperation

To realize the full potential of the service and manufacturing sectors, SAARC member nations must work together. This can be accomplished through a variety of efforts aiming to share best practices, resources, trade agreements, and experience around the region.

6. CONCLUSION

Finally, this study demonstrates the important link between structural transformation and poverty alleviation in the SAARC region, emphasizing the importance of both the service and industrial sectors. The findings show that an increase in Service Value Added (SVA) considerably improves Human Development Index (HDI) levels, implying that the service sector's expansion is critical for job creation and economic empowerment, particularly for women. Similarly, Manufacturing Value Added (MVA) has a positive impact on HDI, demonstrating that a healthy manufacturing sector can lead to greater living standards and lower poverty levels through the formation of local supply networks and more job possibilities. To attain these goals, SAARC member states should

employ focused measures that promote sectoral growth, skill development, and regional integration. By focusing on structural reform, the SAARC region may maximize its potential for economic growth and social advancement, resulting in significant poverty reduction and enhanced quality of life for its citizens.

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