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The Economic Disparity across Sri Lanka's Districts

A. M. Shafna*, N. R. Abeynayake, and Senal A. Weerasooriya

Postgraduate Institute of Agriculture, University of Peradeniya, Sri Lanka

*Corresponding author: fathimashafna462@gmail.com

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ABSTRACT

Globally, there is an increasing regional economic development disparity. The region's growth depends on strong economic development. The sustainable development of Sri Lanka could be harmed by the regional economic disparity. An essential consideration in the establishment of regional development policies is the identification and magnitude of regional economic disparities. This study looks at the current state of Sri Lanka's regional economic development disparity. This study's methodology in this regard involved using several economic development metrics. Data for the year 2019 was acquired through authoritative sources. The multivariate analysis technique using the principal component analysis (PCA) approach has been adopted, which assigns a weight to each dimension and indicator to create composite indexes. The economic development of the western province was higher than that of the other provinces, but there was also a notable disparity between the districts of the western province, with the Colombo district having the highest economic development index. The resulting indices enable policymakers to prioritize regions for additional efforts while also assessing the state of regional disparities. The new index also makes it feasible to classify local government entities logically to support the government's numerous policy-making and development initiatives. To calculate an index of economic disparity similar to that, the approach would apply to any nation.

Keywords: Multivariate statistical analysis, composite index, regional economic development, regional disparities

1 Introduction

Regional inequalities can be categorized as economic, political, and territorial disparities (Kutscherauer, 2010). Economic disparities stand out among these several categories, particularly in regional output, income, and many other qualitative dimensions that are connected to the living standards of a regional community. Because of these regional economic variations, they may become factors influencing regional income accumulation and the growth of prosperous regions (Sri Ranjith and Thilanka, 2019). The concept of regional development disparity mostly refers to differences in a region's level of economic success and well-being compared to other regions (Munandar and Azhari, 2015; OECD, 2003). Therefore, the study of its distinctive indicators and the economic dimension are the key foci of the regional development debates (Luczak and Just, 2020).

According to Jakopin (2015), the achievement of national economic goals is predicated on the economic development of the regions. Uneven economic development has substantial effects on a nation's social cohesion, economic resource usage, and stability, which can be either favorable or negative (Goletsis and Chletsos, 2011). Additionally, economic disparities can have a significant impact on a nation's socio-political environment (Piketty, 2018). However, more researchers argue that growing regional economic disparities can cause money, people, and technology to be constantly concentrated in developed areas, which can overtax infrastructure, worsen environmental pollution, worsen social and public security issues, and increase the number of people living in urban poverty (Zhai, 2017). Scholars point out that in the Sri Lankan context, the gap in provincial Gross Domestic Product (GDP) contribution during the past ten years is rather substantial (Sri Ranjith and Thilanka, 2019).

As the foundational requirement for the successful integration of particular countries and their areas into global economic trends, one of the most crucial economic policy challenges in each nation is to ensure balanced economic development across its territory (Stamenkovi and Savi, 2017). Accordingly, the identification and mitigation of development inequalities between designated administrative-territorial units within a nation constitute significant and challenging socio-economic issues that governmental bodies and those who are responsible for policy development currently come across (Maletic and Bucalo-Jelic, 2016; Rovan and Sambt, 2003). Therefore, the quantification and elimination of regional imbalances in various economic sectors should be given top priority by policymakers (Hansen, 2021).

Efficient policymaking, which is a requirement for strategic planning of balanced regional development and the effective execution of regional policy, requires a thorough grasp of economic disparity and its extent at different administrative levels (Dey, 2015; Stamenkovic and Savic, 2017). The perfor-

mance of the region, which may be evaluated based on numerous metrics, is one of the most crucial indications of regional economic differences (Tvrdon and Skokan, 2011). In Sri Lanka, all planning and execution operations are carried out at the district level (Karunanayake and Abhayaratna, 2002).

Therefore, the article aims to inquire about and demonstrate the potential applications of multivariate statistical analysis (MVA) techniques in modeling the economic disparity of territorial units at the district level of Sri Lanka, which enables determining the weight of individual indicators based on their contribution to regional economic disparity. The multivariate techniques have extensively been used in composite indicator building procedures for combining sets of sub-indicators. Many of these studies have applied principal component analysis (PCA) to define weights and factor analysis (FA) to analyze the structure of indicator variables. These techniques group together sub-indicators that are collinear to form a composite indicator capable of capturing as much common information about those sub-indicators as possible (Nardo et al., 2005). Once this assessment is done, one can get a clear idea of the backwardness of some regions and proceed to tackle the problems of those regions.

2 Methodology

The economic development disparity across districts was evaluated using the composite index method, which has been utilized by several authors previously (Adhikari and Abeynayake, 2010; Bakaric, 2006; Goletsis and Chletsos, 2011; Nardo et al., 2005). In this paper, according to the scientific, practical, completeness, and feasibility principles, ten indicators from aspects of economics for administrative districts of Sri Lanka were considered. In order to choose the indicators, prior literature as well as the availability of data were taken into account. The data were gathered from databases maintained by the Department of Census and Statistics of Sri Lanka (Household Income and Expenditure Survey, 2019), the Ministry of Health of Sri Lanka (Annual Health Statistics, 2019), the Central Bank of Sri Lanka (Annual Report published in 2019), and the Ministry of Finance (Labor Force Survey, 2019) for 25 administrative districts of Sri Lanka (Table 1).

To identify regional differences, a two-stage process was used: (i) indicator selection and (ii) indicator weighting and aggregation. The principal component analysis (PCA) method was used in this study to choose the indicators to be used in the construction of the composite index. The main goal of PCA is to maintain as much variety in the data set as feasible while diminishing a data set's dimensionality, which is made up of numerous connected variables. The principal components (PCs), a new collection of uncorrelated variables that are ordered so that all of the original variables retain the majority of the variance in the first few components, are used to achieve this (Hossein and

Table 1: List of selected indicators

Symbols	Indicators	Measurement
W1	Percentage of households owning a vehicle	Percentage
W2	Percentage of households owning a house	Percentage
W3	Mean monthly household total non-food expenditure	LKR
W4	Mean monthly household per capita income	LKR
W5	Mean monthly household total food expenditure	LKR
W6	Mean monthly household per capita expenditure	LKR
W7	Percentage of households indebted	Percentage
W8	Percentage of the population in poverty	Percentage
W9	Percentage of households owning selected domestic electrical items (sewing machines, washing machines, refrigerators, cookers, and electric fans)	Percentage
W10	Percentage of households using gas as cooking fuel	Percentage

Shinji, 2011; Jolliffe, 2003). These qualities make PCA suitable for constructing the composite index. All variables must be signed positively or negatively when using the PCA method to make them unidirectional (Jha and Murthy, 2003). Therefore, when a component variable had an inverse association with the construct, the reciprocal or complement of all the positively or negatively linked variables was employed.

The indicators found in stage one of our technique were combined in stage two to create a composite indicator. Before aggregation, normalization, and weight elicitation are required (Goletsis and Chletsos, 2011). To prevent adding apples and pears, it is required to convert any indicators in a dataset that are incommensurate with one another or have different measurement units. Normalization mostly provides this function (Nardo et al., 2005). Accordingly, the min-max transformation approach was then used to normalize the data because this approach preserves the connections between the original data values. The drawback of having a restricted range is that it will result in smaller standard deviations, which can reduce the impact of outliers.

The selection of the weighting model and the aggregation technique is necessary to integrate the many dimensions in a meaningful fashion, which is essential to the creation of a composite index (Bakaric, 2006). Because not all variables contribute equally to a composite index, weight should be assigned based on the importance of the component (Hyeon-seung and Cyn-young, 2017; Praus, 2019). The weighted PCA was used to create a composite index.

Suppose that the first k PCs are sufficient to describe the variation in the data (Z_k). Loadings, which denote the correlation coefficients between X and Z, are provided by $Corr(x_i, Z_k)=\rho_{ik}=e_{ik}(\lambda_k)^{1/2}$, $i = 1, 2, \ldots, k$, where e_{ik} is the

i^{th} element of the eigenvector k. The amount of variance in variable x_i is explained by PC Z_k is represented by the square of loadings ρ_{ik}^2. The sums of squared loadings of $Z_1, Z_2, \ldots, Z_k$ are $\lambda_1, \lambda_2, \ldots, \lambda_k$, which are the corresponding variances of $Z_1, Z_2, \ldots, Z_k$, because $\sum_{i=1}^{k} a_{i1}^2 = \ldots = \sum_{i=k}^{k} a_{ik}^2 = 1$. This allowed us to normalize the squared loadings to a sum of one, which is represented by $\rho_{ik}^2 = \rho_{ik}^2/\lambda_i$, $i = 1, 2, \ldots, k$. Finally, $\theta_k = \lambda_i/(\lambda_1 + \ldots + \lambda_k)$, $i = 1, 2, \ldots, k$ was constructed to calculate the percentage of explained variance in the data when only the first two PCs are taken into account. The weights given to the corresponding PCs for aggregation are $\theta_1, \theta_2, \ldots, \theta_k$. Consequently, the index can be developed as shown in equation (1),

$$(\rho_{11}^2 * \theta_1 + \rho_{12}^2 * \theta_2)x_1 + (\rho_{21}^2 * \theta_1 + \rho_{22}^2 * \theta_2)x_2 + (\rho_{k1}^2 * \theta_1 + \rho_{k2}^2 * \theta_2)x_k \quad (1)$$

3 Results and Discussion

3.1 Economic disparity: Factual outlook

Table 2 lists descriptive statistics for the economic indicators that were taken into consideration, including minimum, maximum, mean, standard deviation, variance, skewness, and kurtosis.

Table 2: Descriptive statistics of the regional economic indicators

Indicator	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis
W1	20.3	90.8	70.26	18.45	340.47	-1.26	1.01
W2	60.4	97.8	90.48	8.27	68.43	-2.31	6.54
W3	14515	81023	33132.88	14104.45	1.99E+08	1.81	4.76
W4	11412	34625	17641.88	5127.82	26294532	1.71	4.05
W5	17780	27870	21334.64	2412.93	5822215	0.97	0.93
W6	9255	28470	14584	4131.38	17068293	1.79	4.6
W7	48	76.1	59.85	6.97	48.62	0.14	0.34
W8	5.24	23.75	10.88	4.85	23.55	1.16	0.75
W9	61	97.4	82.18	10.07	101.48	-0.91	-0.1
W10	10.5	80	33.25	17.39	302.46	0.92	0.67

The standard of living in the nation can be understood and compared across time using household per capita income, which is usually viewed as a better measure. Figure 1 depicts the mean monthly household income and the mean monthly household per capita income. The mean household income is the prime statistic used to compare income values reported in different domains over time. The mean household income is the value obtained by dividing the total aggregated household income by the total number of households in a domain or in an area. The mean household income per month for Sri Lanka was Rs. 76,414 at the national level (Household Income and Expenditure Survey, 2019). Considering the district figures, Colombo district has indicated the highest mean monthly household income, followed by Gampaha, Puttalam, and Kalutara. The Kilinochchi and Batticaloa districts have lower mean monthly household incomes. Most other districts' mean monthly household income is in the range of Rs. 40,000 to Rs. 60,000 per year.

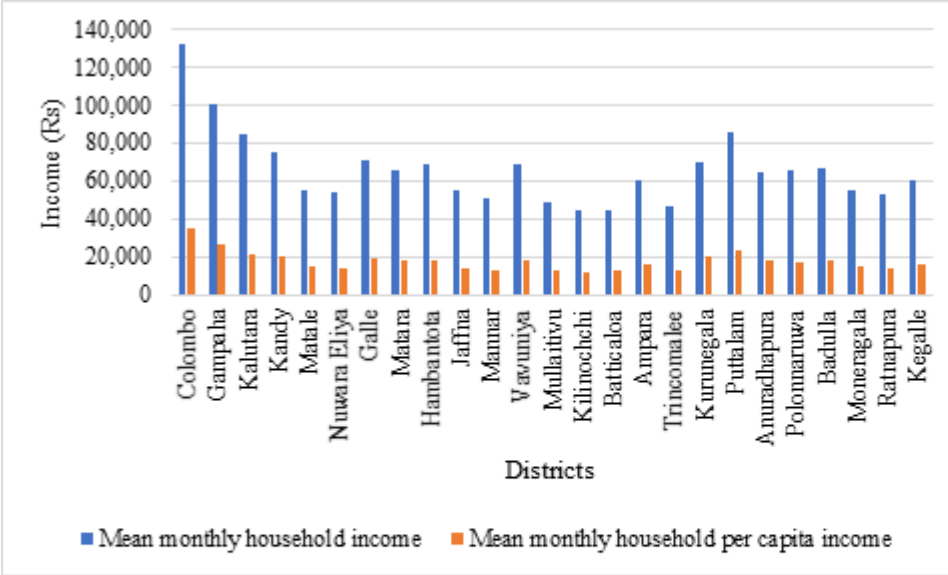

Fig. 1: Mean monthly household income and mean monthly household per capita income across districts

Figure 2 depicts the mean monthly household expenditure and the mean monthly household per capita expenditure. Household expenditure is the value of goods and services that were acquired by a household for the direct satisfaction of the needs and wants of its members. The highest mean household expenditure per month is reported from Colombo district (Rs. 108,893 per month), while the lowest mean household expenditure is reported from Mullaitivu district (Rs. 34,181 per month). The household per capita expenditure in a domain is calculated by dividing the estimated total household expenditure by the estimated number of people in the domain. The mean per capita expenditure at the national level was Rs. 16,959 (Household Income and Expenditure Survey, 2019). Furthermore, the highest mean per capita expenditure is reported from Colombo district, while the lowest is reported from Mullaitivu district.

The components of consumption expenditure used to construct these aggregates fall into two main categories such as food items and non-food items. All of the food that households consume was taken into account when calculating food expenditure. The term "household non-food expenditure" refers to all out-of-pocket costs that the resident household incurs other than food. Figure 3 illustrates the graphical representation of food expenditure and non-food expenditure. In the majority of the districts, non-food expenditure is higher than food expenditure. In Colombo and Gampaha districts, non-food expenditure

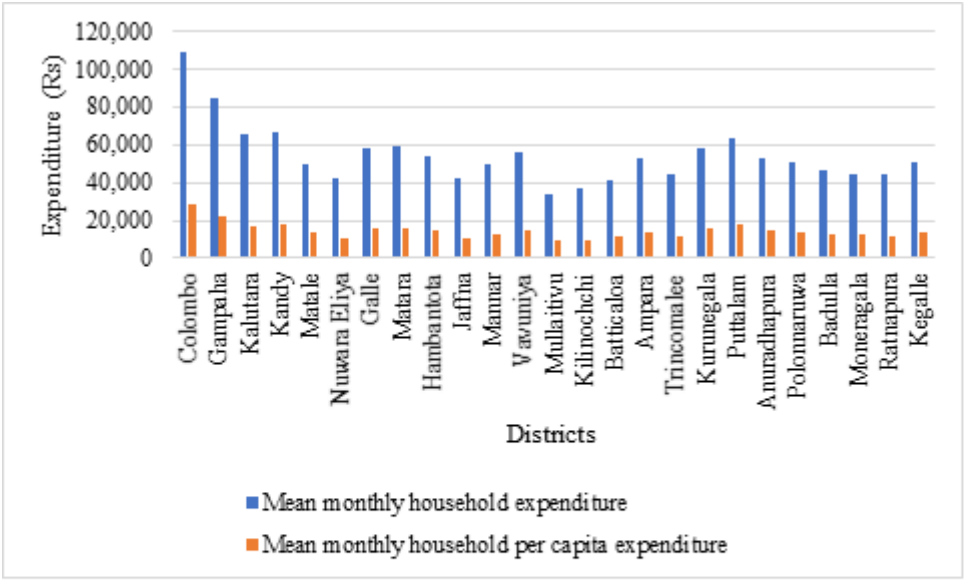

Fig. 2: Mean monthly household expenditure and mean household per capita expenditure across districts

is much higher than food expenditure. Likewise, in Mullaitivu and Batticaloa districts, food expenditure is a bit higher than non-food expenditure.

Household debt is defined as all liabilities of households that require it to be paid at a fixed date in the future with or without interest to the creditor. Debt is calculated as the total of all obligations owed to the following creditors: banks (public and private), Samurdhi community-based banks, finance and leasing firms, employees' places of employment (departments, boards, private companies, etc.), money lenders, prepayment of credit card balances, market stalls, sales of assets (land, houses, jewelry, etc.), durable goods bought in installments, and other creditors (The Household Income and Expenditure Survey, 2019). Figure 4 illustrates the indebtedness percentage across districts. Accordingly, the highest percentage of indebted households were reported in Vavuniya district (76.1%), followed by Mannar (70.5%), Polonnaruwa (70.3%), and Anuradhapura (64.3%). The least indebted households were reported from Jaffna district, with 48%, followed by Batticaloa (48.2%) and Mullaitivu (48.3%).

The household, which consists of the members whose per capita expenditure is lower than the value of the official poverty line, is considered a household in poverty. Figure 5 shows the percentage of the population in poverty and the percentage of households in poverty. As depicted in the figure, the highest percentage of households in poverty is reported from Mullaitivu district, while the lowest percentage is reported from Colombo district, with both poverty

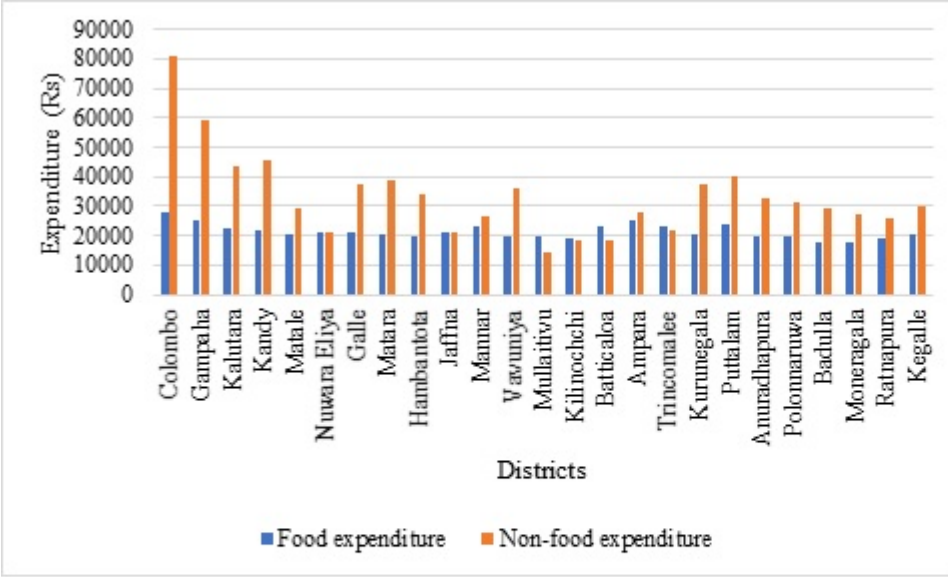

Fig. 3: Average monthly food expenditure and non-food expenditure across districts

lines. Also, the highest percentage of the population in poverty was reported in Vavuniya district, while the lowest percentage was reported in Matara district.

Figure 6 illustrates the percentage of households owning a vehicle. Household ownership of vehicles is high in Northern Province districts and low in Nuwara Eliya district.

Figure 7 illustrates the percentage of households owning a house. Household ownership is lower in Nuwara Eliya district, followed by Jaffna, Colombo, and Badulla districts, and it doesn't differ among other districts.

Figure 8 illustrates the percentage of households owning a selected domestic electrical item (sewing machines, washing machines, refrigerators, cookers, and electric fans). It is high in Western Province districts and does not vary much among other districts except Mullaitivu, Badulla, Nuwara Eliya, Kilinochchi, and Moneragala districts; it is also lower in Mullaitivu district.
Figure 9 illustrates the percentage of households using gas as cooking fuel. It is high in Colombo district and low in Mullaitivu, Moneragala, and Badulla districts.

3.2 Economic disparity index

After choosing the input variables and normalizing their values, the justification for doing the analysis must be considered before choosing the method of factor analysis. As a result, the correlation matrix of the original variables (Table 3) was computed and reviewed first. The factor analysis is justified if

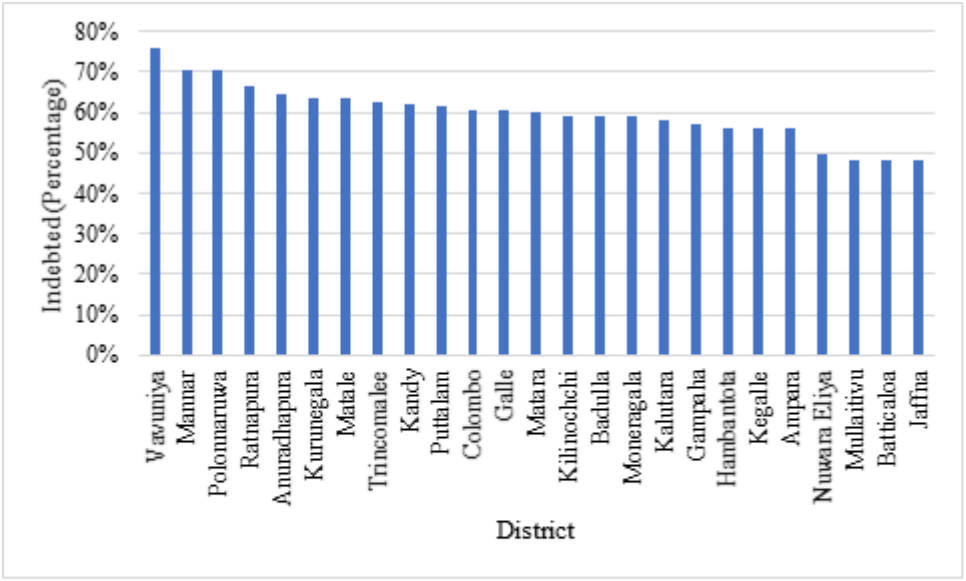

Fig. 4: Indebted percentage across districts

there is a high degree of correlation between the manifest variables (Gilbert and Churchill, 1995). After evaluation of the correlation matrix, all variables were discovered to have at least one correlation coefficient with an absolute value greater than 0.3, which is the required threshold for acceptance (Kinnear and Gray, 1994). Therefore, all variables were included in the analysis.

Table 3: Correlation matrix of economic indicators

Indicator	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
W1	1									
W2	0.621 ***	1								
W3	-0.079	-0.115	1							
W4	-0.056	-0.143	0.967 ***	1						
W5	0.167	-0.133	0.595 ***	0.562 ***	1					
W6	-0.041	-0.074	0.991 ***	0.965 ***	0.653 ***	1				
W7	0.135	0.264 0.246	0.151	-0.087	0.221	1				
W8	0.023	-0.267	-0.430 **	-0.411 **	-0.135	- 0.433 **	0.093	1		
W9	0.292	0.201	0.663 ***	0.599 ***	0.678 ***	0.699 ***	0.361 *	-0.358 *	1	
W10	0.157	-0.133	0.719 ***	0.672 ***	0.884 ***	0.753 ***	0.027	-0.227	0.755 ***	1

***p<0.01, **p<0.05, *p<0.1

The factors can be extracted from a set of data using a variety of techniques. Component factor analysis and common factor analysis are the two most commonly used factor analytic techniques. In this study, the PCA technique was applied, which looks for a set of factors. To take into consideration every typical and distinctive (specific plus error) variance in a set of variables. To determine whether the data are sufficient to perform a PCA, Bartlett's test of sphericity and the KMO (Kaiser-Meyer-Olkin) measure of sample adequacy can be utilized (Lu et al., 2015; Villaverde and Maza, 2012). The total KMO value for the set of variables was 0.723, exceeding the required minimally acceptable value, and Bartlett's statistic was 266.354 (df = 45, p = 0.000 <

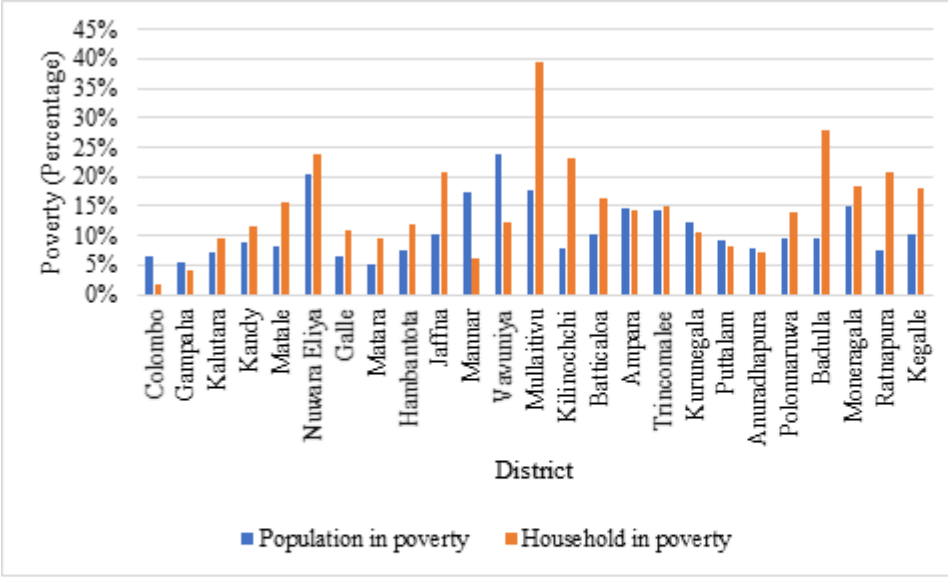

Fig. 5: Percentage of population in poverty and percentage of household in poverty

0.05), indicating that the identity matrix and the correlation matrix are not the same, indicating a significant linear dependence between the observed indicators. The results demonstrated that Bartlett's measure on the correlation matrix passes at the 0.05 significance level and that the KMO statistic is greater than 0.5, proving that the sample size was sufficient to carry out a PCA. Table 4 shows the unrotated PCA of economic indicators.

Table 4: The unrotated principal component analysis of economic indicators

Loadings	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7	Comp.8	Comp.9	Comp.10
W1	0.039	0.602	0.370	0.053	0.441	0.525	0.087	0.088	0.103	0.028
W2	-0.015	0.660	-0.143	0.218	0.061	-0.681	-0.033	-0.138	-0.074	-0.057
W3	0.423	-0.098	-0.216	-0.054	0.264	-0.051	0.011	-0.038	0.540	-0.630
W4	0.407	-0.123	-0.194	0.000	0.451	0.032	-0.162	0.076	-0.733	-0.090
W5	0.352	-0.047	0.498	0.020	-0.205	-0.293	0.350	0.602	-0.072	-0.083
W6	0.432	-0.072	-0.163	-0.028	0.235	-0.143	-0.010	0.041	0.347	0.764
W7	0.091	0.319	-0.408	-0.698	-0.232	0.125	0.386	0.078	-0.110	0.012
W8	-0.201	-0.094	0.426	-0.670	0.332	-0.331	-0.301	-0.090	0.039	-0.010
W9	0.374	0.243	0.081	-0.095	-0.484	0.157	-0.722	0.067	0.023	-0.019
W10	0.393	-0.032	0.359	-0.017	-0.183	0.016	0.286	-0.764	-0.127	0.012

Since all of the most significant loadings were on the first factor, the unrotated factor solution was challenging to understand. This pattern is typical. To establish a simpler, theoretically more relevant factor pattern where each component is independent of all other factors, the varimax rotation method was used to transfer the variance from earlier factors to later ones (Bakaric, 2006). The results of the varimax rotation are shown in Table 5. After that, factors were extracted using the eigenvalue criterion. According to the eigenvalue (latent root) requirement, each factor must explain more variance than one factor (Lu et al., 2015).

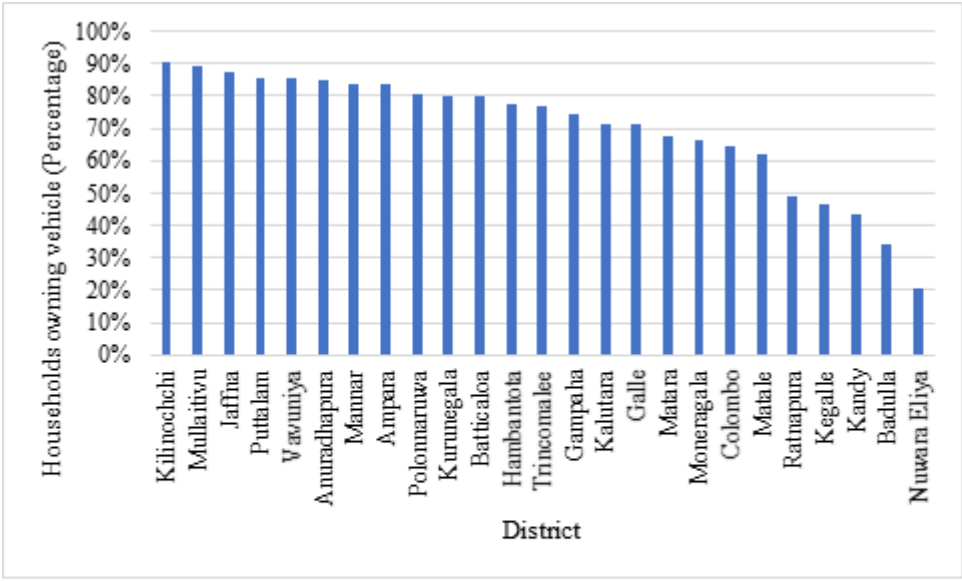

Fig. 6: Percentage of household owning a vehicle

Four components were kept after varimax rotation, and they accounted for 90.73% of the total variation. The variables with factor loadings that are much higher than 0.30 were maintained to produce a composite index since factor loadings above 0.30 are regarded as substantial, while loadings over 0.50 are regarded as extremely significant (Stamenkovic and Savic, 2017). Consequently, the indicators listed below were chosen to create the composite index of regional economic disparity: the percentage of households in debt, the percentage of households owning a particular domestic electrical item (sewing machines, washing machines, refrigerators), the percentage of households owning a vehicle, the percentage of households owning a house, the mean monthly household total non-food expenditure, the mean monthly household per capita income, and the mean monthly household per capita expenditure on food.

Table 5: Varimax rotation of economic indicators

Loadings	RC1	RC3	RC4	RC6	RC9	RC2	RC7	RC8	RC5	RC10
W1	-0.061	0.143	0.056	0.938	0.035	0.300	0.041	0.004	-0.001	0.000
W2	-0.094	-0.076	0.162	0.382	-0.192	0.881	0.037	-0.004	0.001	0.000
W3	0.908	0.320	0.148	-0.064	-0.179	-0.047	0.061	0.025	0.089	-0.033
W4	0.945	0.242	0.040	-0.010	-0.149	-0.078	0.062	-0.004	-0.116	-0.017
W5	0.363	0.906	-0.108	0.086	0.012	-0.051	0.021	-0.161	-0.001	0.000
W6	0.892	0.383	0.119	-0.048	-0.173	0.002	0.073	-0.001	0.051	0.058
W7	0.148	-0.040	0.974	0.056	0.077	0.122	0.056	0.002	0.002	0.000
W8	-0.289	-0.047	0.085	0.026	0.937	-0.159	-0.051	-0.005	0.000	0.000
W9	0.411	0.602	0.292	0.172	-0.205	0.128	0.543	0.013	0.000	0.000
W10	0.482	0.815	-0.007	0.101	-0.064	-0.088	0.082	0.273	0.002	0.000
Proportion Variance	49.48	18.733	11.742	10.771	4.421	2.258	1.377	0.946	0.228	0.046
Cumulative Variance	49.48	68.212	79.954	90.725	95.146	97.404	98.781	99.727	99.954	100
Eigenvalue	4.948	1.873	1.174	1.077	0.442	0.226	0.138	0.095	0.023	0.005

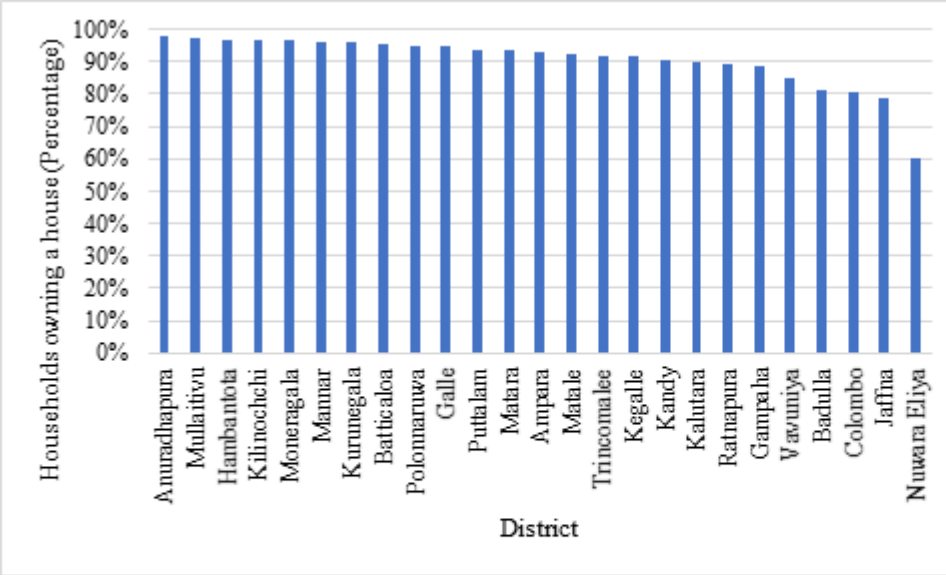

Fig. 7: Percentage of household owning a house

Adequacy tests were once again run on the previously chosen variables in order to construct the composite index using PCA. For the variables that were chosen, the overall KMO value was 0.708, and Bartlett's statistic was 253.924 ($df = 36$, $p = 0.000 < 0.05$). The findings showed that the sample was sufficient to carry out a PCA. Table 6 displays the unrotated PCA findings. Varimax rotation was used to simplify the results' interpretability, and the results are displayed in Table 7. Three components that effectively characterize the movements of indicators were extracted using the eigenvalue criterion to create the composite index, which accounts for 86.62% of the total variance.

Table 6: The unrotated principal component analysis of economic disparity index indicators

Loadings	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7	Comp.8	Comp.9
W1	0.041	0.614	0.340	0.096	0.680	0.133	0.053	0.116	0.026
W2	-0.030	0.646	-0.030	0.424	-0.545	-0.290	-0.095	-0.094	-0.053
W3	0.428	-0.095	-0.222	0.263	0.076	-0.038	-0.040	0.540	-0.624
W4	0.412	-0.121	-0.179	0.396	0.222	0.088	0.116	-0.740	-0.095
W5	0.367	-0.025	0.444	-0.292	-0.112	-0.504	0.552	-0.051	-0.088
W6	0.437	-0.068	-0.164	0.257	0.007	-0.084	0.051	0.334	0.768
W7	0.100	0.335	-0.697	-0.524	0.183	-0.276	0.010	-0.089	0.006
W9	0.379	0.254	0.022	-0.307	-0.375	0.727	0.166	0.002	-0.015
W10	0.406	-0.014	0.304	-0.255	-0.015	-0.149	-0.799	-0.130	0.011

The inferred weights are listed in Table 8. It shows that the indicators are given quantitatively different weights across the dimensions, which is also consistent with Huh and Park's (2017) results that not all indicators contribute equally to the creation of composite indices. Here, the percentage distribution of mean monthly household total non-food expenditure and mean monthly

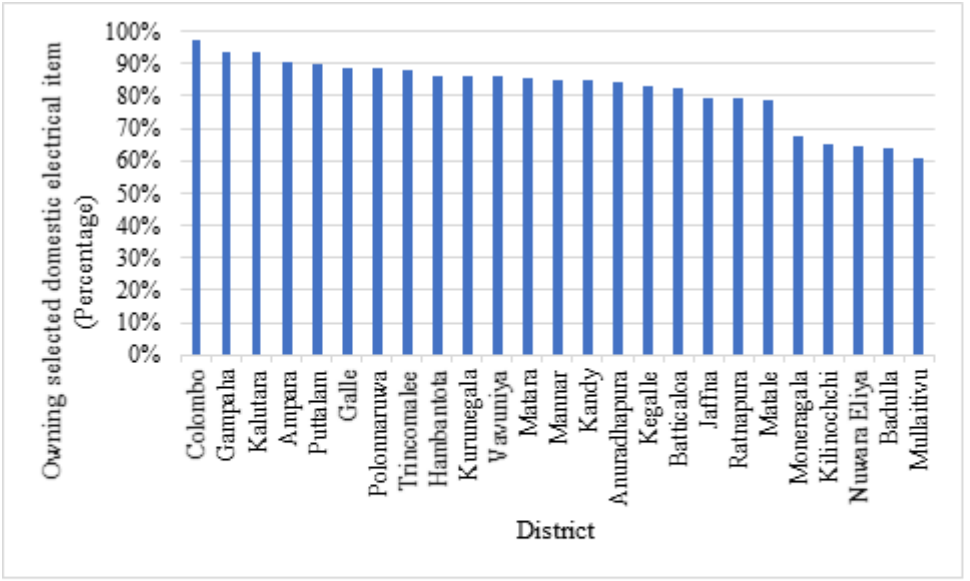

Fig. 8: Percentage of household owning a selected domestic electrical item (sewing machines, washing machines, refrigerators, cookers and electric fans)

Table 7: Varimax rotation of economic disparity index indicators

Loadings	RC1	RC8	RC3	RC2	RC5	RC6	RC7	RC4	RC9
W1	-0.067	0.139	0.058	0.332	0.927	0.057	0.006	-0.001	0.000
W2	-0.064	-0.079	0.139	0.925	0.333	0.056	-0.005	0.001	0.000
W3	0.932	0.295	0.137	-0.038	-0.063	0.102	0.032	0.088	-0.035
W4	0.960	0.222	0.036	-0.077	-0.004	0.081	-0.004	-0.119	-0.016
W5	0.368	0.903	-0.098	-0.067	0.098	0.080	-0.139	-0.001	0.000
W6	0.915	0.359	0.110	0.008	-0.048	0.113	0.007	0.050	0.058
W7	0.136	-0.049	0.978	0.120	0.054	0.075	0.002	0.002	0.000
W9	0.451	0.539	0.257	0.163	0.154	0.624	0.019	0.000	0.000
W10	0.499	0.788	-0.010	-0.087	0.108	0.160	0.293	0.003	0.000
Proportion Variance	53.149	20.719	12.748	6.576	3.546	1.877	1.073	0.261	0.051
Cumulative Variance	53.149	73.868	86.616	93.192	96.738	98.615	99.688	99.949	100
Eigenvalue	4.783	1.865	1.147	0.592	0.319	0.169	0.097	0.023	0.005

household per capita income received equal and highest weight (0.154), followed by the mean monthly household per capita expenditure and mean monthly household per capita expenditure (0.153). The majority of the research also determines regional economic differences based only on per capita income (Antonescu, 2012; Bonet and Meisel, 2009; Pittau et al., 2010; Ramakrishnan and Cerisola, 2004). The very least weights of 0.004 and 0.005, respectively, were given to the percentage of households that own a vehicle and those that own a house.

The final economic disparity index was created by combining the dimensions and weights. The economic development index for each district is shown in Figure 10. It demonstrates that economic development in Sri Lanka's districts differs noticeably, which is congruent with the conclusions of Karunaratne (2007) and Udupporuwa (2007). The figure demonstrates that the Colombo

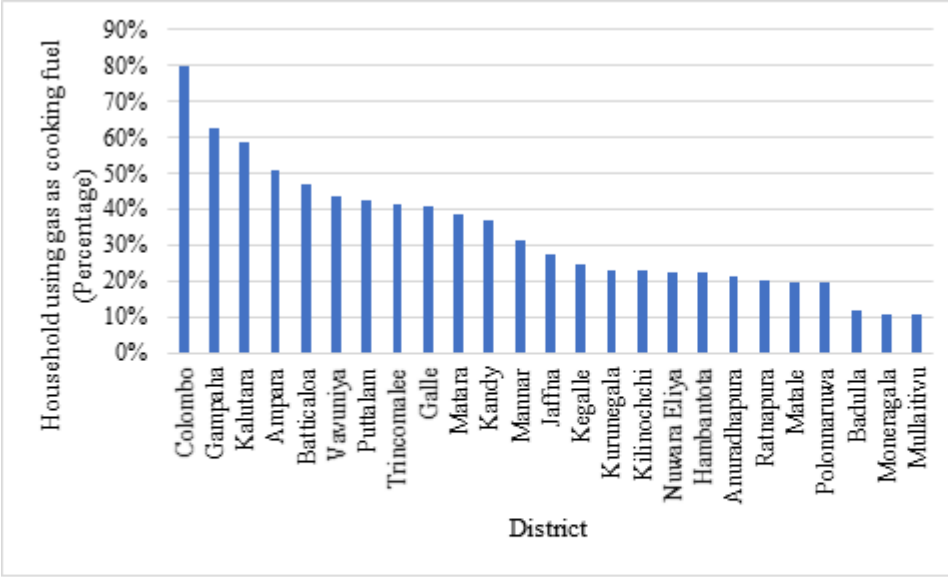

Fig. 9: Percentage of household using gas as cooking fuel

Table 8: Weights of economic index indicators

Indicators	Loadings			Squared loadings (Scaled to unit sum)			Weight
	RC1	RC2	RC3	RC1	RC2	RC3	
W1	-0.067	0.139	0.058	0.005	0.019	0.003	0.004
W2	-0.064	-0.079	0.139	0.004	0.006	0.019	0.005
W3	0.932	0.295	0.137	0.868	0.087	0.019	0.153
W4	0.960	0.222	0.036	0.922	0.049	0.001	0.153
W5	0.368	0.903	-0.098	0.135	0.815	0.010	0.151
W6	0.915	0.359	0.110	0.838	0.129	0.012	0.154
W7	0.136	-0.049	0.978	0.018	0.002	0.956	0.154
W9	0.451	0.539	0.257	0.203	0.290	0.066	0.088
W10	0.499	0.788	-0.010	0.249	0.620	0.000	0.137
Exp.Var	3.244	2.019	1.087				
Exp/Tot	0.511	0.318	0.171				

district has the highest economic development index (0.91), followed by the Gampaha (0.66), Puttalam (0.51), and Kalutara districts (0.5). Mullaitivu (0.05) had the lowest level of economic development, followed by the Nuwara Eliya district (0.13). In their investigation, Adhikari and Abeynayake (2010) discovered that Colombo district had the highest score on the Economic Index and Salakasooriya (2021) found that Gampaha district is the second most developed district in Sri Lanka, which are also supporting this study findings.

In accordance with Salakasooriya (2001) and Wanasinghe (2002)'s findings, that the western province has become an economic core and economic activities are concentrated in the Colombo district According to Hewage (2014) the level of economic development differs among the western province regions. Karunanayake and Abhayaratna (2002) also asserted that there is a regional economic divide between the districts of the western province. The study's

finding that western province districts have higher levels of economic development than other provinces is supported by the studies mentioned above.

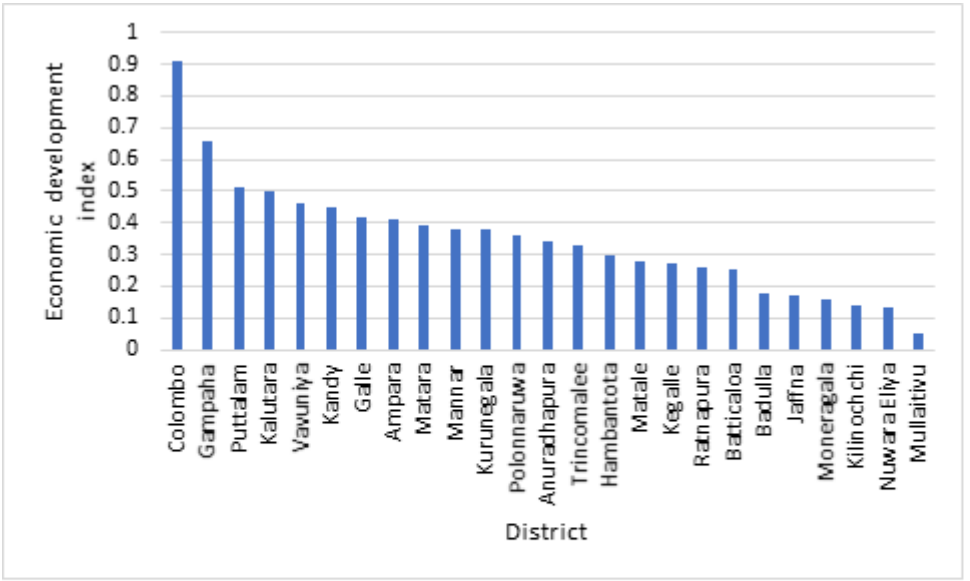

Fig. 10: Economic development index across districts

4 Conclusion

This study evaluated the economic disparities among the twenty-five Sri Lankan districts. It is clear from the discussion in this article, that despite Sri Lanka's expertise in regional development planning and implementation over the past few decades, there are still significant regional differences in the country's growth and development. Regional gaps and disparities in Sri Lanka are a long-standing problem that has gained new significance as a result of the disproportionate concentration of economic development in the western province and the Colombo Megalopolis at the expense of other, less prosperous, and disadvantaged regions. It is evident that Sri Lanka's development initiatives during the past decades have not been able to significantly reduce the country's economic disparities.

The multivariate statistical approach offers a tool for the estimation of each territorial unit's level of development and may thus be utilized as a policy tool for resource allocation and planning. The findings shown above give some indication of the need to coordinate regional economic policies with local geographic regions so that the government may start and carry out specific action plans to improve the situation in deprived regions and steps must be taken to encourage economic activity in the peripheral regions in order to eliminate inequities. The growth potential of each region should be taken into account while adopting regional development policies. Therefore, a small takeaway

from this article is that government policy should quickly endeavor to reduce the gaps in important economic activity between the fading and the accelerating regions rather than crudely dividing public sector investment across the territories. However, to implement any policy programs successfully, in-depth policy analysis and a thorough awareness of the socio-political environment are still necessary since Sri Lanka faces a big economic crisis at present.

This study has a few limitations, and one of those drawbacks is that the dataset used for this paper's analysis could only take into account the quantities of the economic aspects, not their quality. Moreover, there is a dearth of information about the economic of Sri Lanka's districts by including more indicators from economic aspects of each district like GDP, import, export, total factor productivity, etc. future analysis may be performed in place of the aforementioned discussions and conclusions because regional statistical database to support this analysis is lacking in comparison to that of a number of other countries.

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