

Research article

Analysis on industry cluster for regional development in a haor region of Bangladesh: A location quotient analysis

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A B S T R A C T

Regional development is a complex and dynamic process since each region has its unique characteristics of economic and social structure. The aim of the current study is to identify the leading commodity as well as base and non-base economic sub-sectors in the mostly poor *haor* region of Bangladesh by introducing location quotient (LQ) analytical technique based on the regional and national level employment data. The analytical results clarified that the agriculture, forestry, and fishing are the leading sub-sectors of the local economy for the regional economic growth. Policy implications are provided based on the analytical results.

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1. INTRODUCTION

The economy of Bangladesh has been continuously developed during last twenty years. However, the regional differences in the country are also in increase due to uneven distribution of resources, national budget, and policy planning (Hasnath, 2020; Mithun, 2021). The haor region of Bangladesh is one of the least developed regions of the country (MoWR, 2012). Moreover, natural disasters especially flood and flash floods are common phenomena in the haor region (Rana et al., 2020). Although the haor region contributes 21.44% of the total rice (staple food) production of the country (BBS, 2020), the poverty rate in the target region is increasing over time (Fig. 1).

In the target region, about 52% of total households are belong to the farm households and majority of them (84.64%) are small farm

households with farm size below 2.50 acres of land (BBS, 2020). In addition, farmers' entrepreneurship is still limited in the region (Uddin et al., 2019). In recent years, the Government of Bangladesh has introduced special support program (70% subsidy to adopt farm machinery) to promote sustainable farm mechanization in the haor region (MoA, 2020) but the impact is yet to be examined.

Therefore, the main purpose of this study was to examine the economic sectors most important for the target region in order to contribute to regional development by introducing a secondary data-based location quotient analysis (LQ) approach. It will further help draw effective policy implications for sustainable regional development based on the analysis results, focusing the potential industries or services in the target region.

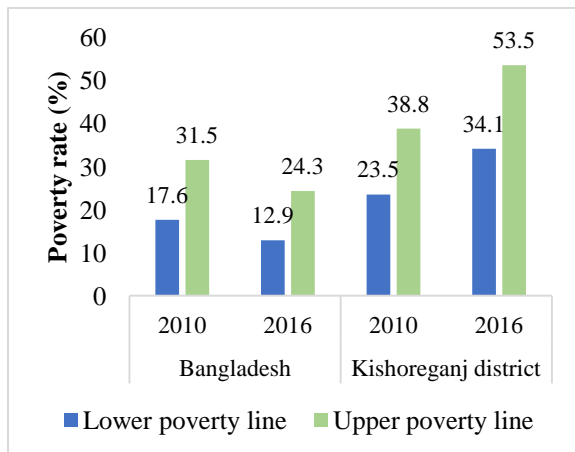


Figure 1. Change in poverty rate from 2010 to 2016 in the target region (Data source: Household Income and Expenditure Survey, 2010 and 2016)

2. MATERIALS AND METHODS

Theoretical model

Location quotient (LQ) analysis approach is commonly used to identify the leading commodity or industry within a region towards economic development. Moreover, LQ also indicates the capability to export, import or be self-sustaining of each industry in a regional economy. The LQ can be estimated through the following equation (1) (O’Sullivan, 2003; Schaffer, 1999):

$$LQ = \frac{r_i/r}{R_i/R} \dots\dots\dots(1)$$

Whereas,

LQ= Location Quotient

r_i = the employment within industry ‘i’ within the region

r = total employment within the region

R_i = the employment within industry ‘i’ within the reference region

R = total employment within the reference region

Interpretations of LQ: The estimated value of LQ is interpreted as follows. If LQ is greater than 1.00, it indicates the sector is a basic sector for economic development in the local economy. If the LQ is less than 1.00, it indicates the sector is not meeting local needs (Dunn, 2005; Prats and Ramirez, 2018).

Target region

The haor region of Bangladesh included seven districts of north-eastern part of the country, namely Kishoreganj, Sunamganj, Netrokona, Sylhet, Habiganj, Maulvibazar, and Brahmanbaria (MoWR, 2012) (Fig. 2). The study was conducted in the Kishoreganj district due to the highest poverty rate among the *haor* districts (Table 1). The socio-economic situation of target area is mentioned in Table 2.

Table 1. Poverty situation among the *haor* districts of Bangladesh

<i>Haor</i> districts of Bangladesh	% of HH below lower poverty line	% of HH below upper poverty line
Sunamganj	19.3%	26.0%
Sylhet	8.8%	13.0%
Habiganj	9.9%	13.4%
Maulvibazar	7.0%	11.0%
Netrokona	15.6%	34.0%
Kishoreganj	34.1%	53.5%
Brahmanbaria	4.6%	10.3%
National average	12.9%	24.3%

Source: BBS, 2016 (Household Income and Expenditure Survey of Bangladesh)

Data used in the study

In the current study, data used from Bangladesh Economic Census 2013, which compiled the employment data in different sectors except agriculture. Therefore, the employment data in the agriculture is considered from Population and Housing Census 2011. However, employment data is also available from Labor Force Survey, but only in national level.

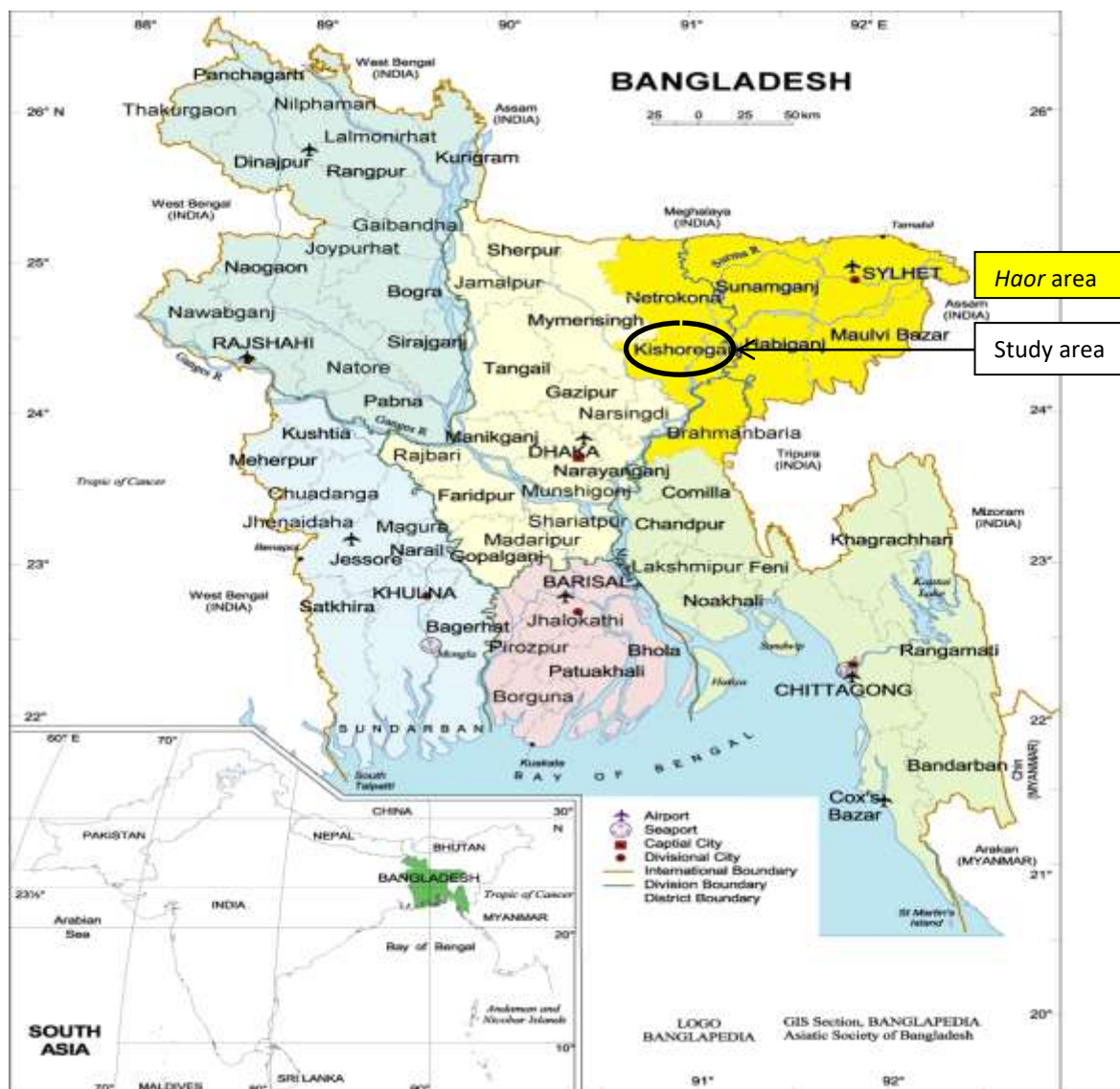


Figure 2. The Map of Bangladesh showing target region of the study (Source: Banglapedia)

Table 2. Socio-economic situation of the target area

Parameters	Kishoreganj District	National average	Source
Total population	2,911,907	144,043,700	BBS (2011)
Percentage of rural population	83.20%	76.76%	
Population density/km ²	1,083	1,203	
Adult literacy rate (15 years and above)			
• Both sex	41.18%	53.00%	BBS (2016)
• Male	43.36%	56.80%	
• Female	42.78%	49.20%	
Poverty (Head Count Rate)			BBS (2016)
% of HH below the lower poverty line	34.10%	12.90%	
% of HH below the upper poverty line	53.50%	24.30%	BBS (2018)
Annual household income (BDT)	187,854	202,724	
Ownership of land by female members of households	23.47%	32.04%	

3. RESULTS AND DISCUSSION

Table 3 showed the estimation of LQ clarified the basic and non-basic sub-sectors of local economy in the target regions. From the calculation it was evident that the three sub-sectors such as (i) agriculture, forestry and fishing, (ii) education, and (iii) human health

and social work activities had the LQ greater than 1.00. It indicated that those three sub-sectors were basic and more important for local economy. Rest of the sub-sectors having LQ less than 1.00, it implied that those industries were not self-sufficient in the target region and were not meeting the local needs.

Table 3. Result of LQ analysis in the target region

Industry	Bangladesh	Kishoreganj district	LQ	Comment
Agriculture, forestry and fishing*	19887000	448934	1.333539	Basic
Mining and quarrying	64444	44	0.040333	Non
Manufacturing	7183446	73769	0.606643	Non
Electricity, gas, steam and air conditioning supply	56647	558	0.581902	Non
Water supply, sewerage, waste management and remediation activities	14671	153	0.616061	Non
Construction	46552	274	0.3477	Non
Wholesale and retail trade, repair of motor vehicles and motorcycles	8398810	109070	0.767149	Non
Transportation and storage	1884729	21485	0.673409	Non
Accommodation and food service activities (hotel and restaurant)	1214455	14545	0.707497	Non
Information and communication	100603	1165	0.684081	Non
Financial and insurance activities	477393	5381	0.665854	Non
Real estate activities	43296	427	0.582603	Non
Professional, scientific and technical activities	160032	1172	0.432627	Non
Administrative and support service activities	151653	1718	0.669213	Non
Public administration and defense, compulsory social security	575505	7979	0.819015	Non
Education	1483441	26268	1.046042	Basic
Human health and social work activities	418548	8901	1.256278	Basic
Art, entertainment and recreation	33441	360	0.635939	Non
Other service activities	2193184	29198	0.786449	Non
Total employment	44387850	751401	-	

Data source: Economic Census 2013 (*Population and Housing Census 2011)

For the development of the haor region, the government of Bangladesh has drawn up a master plan for 20 years (until FY 2031-32) that integrates multisectoral approaches. The master plan will be implemented in the short, medium, and long-term basis. It will cover disaster risk management, environmental sustainability, agricultural production, expansion of education, human settlement, health and sanitation facilities, road communications, and tourism

(MoWR, 2012; Gillingham, 2016). Our analysis will contribute to the effective implementation of the formulated plan for the development of haor region in the right direction. In addition, it is expected that the entrepreneurship development in the flagship sub-sectors will play a major role in the regional development by reducing poverty and transforming the overall social fabric (Naminse and Zhuang, 2018; Morris et al., 2020; Rana et al., 2022).

4. CONCLUSION

From the above analytical results, it may be concluded that the Agriculture, Forestry & Fisheries sub-sector is the flagship and superior commodity in the target region. However, there are further potential to develop the other sub-sectors in the target region. Although the region produces more in the agricultural sectors, poverty in the target region is increasing. Therefore, the policy implications suggest that the government should pay more attention to the structural change particularly in the entrepreneurship development in the flagship sub-sectors for socio-cultural transformation that have greater potential for accelerating sustainable regional growth and poverty reduction in the region.

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