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Muhammad Yanzar Sarim

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CONSTRUCTION INDUSTRY CLUSTER
AN INVESTIGATION OF ITS EXISTENCE IN PAKISTAN

Muhammad Yanzar Sarim

Supervised by Professor Gabriel Salvador Fregoso Jasso

University of Guadalajara

Old Dominion University

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1. Introduction

Clusters can be defined as a geographical concentration of industries and institutes that are unified and interconnected. These industries and institutes are not just physically close to each other but also gain some advantage from being near to each other.

2. Aim of the Research

The aim of the research is to confirm if a construction industry cluster can exist in the Lahore Division of Punjab, Pakistan and state the benefits the country can gain from it.

3. Limitations of the Study

The limitations of the study are as follows:

1. A large number of unregistered companies and workers in the construction industry in Pakistan have not been taken into consideration.
2. Unavailability data of workers in the construction industry at division level in Pakistan.

To counter the issue of unavailability of data at divisional level, an assumption was made that the construction workers in the province are distributed in accordance with the ratio of the working age population in the divisions. Hence, the following formula is used to calculate number of construction worker in the division:

$$WD = (PD/PP) \times (WP) \quad (1)$$

WP: Number of workers in the province

WD: Number of workers in the division

PP: Working age population of the province (18-65)

PD: Working age population of the division (18-65)

However, the obtained number of workers in the division using the above-mentioned formula is expected to contain an error.

4. Methodology

Research Approach and Design

A quantitative approach has been used for the research. To conclude if a construction industry cluster can exist in a region (Fregoso, 2010), the following formula and conditions have been used:

$$\text{Coefficient of the Industrial District (CDI)} = (TTS/TTI) / (TTI/PTE) \quad (2)$$

$$\text{Economic Unit Coefficient for Labor in the Sector on Divisional Level (CULS)} = TTS/UES \quad (3)$$

$$\text{Economic Unit Coefficient for Labor in the Industry in the Provincial Level (CULI)} = TTI/UEI \quad (4)$$

TTS: Total labors in the sector on divisional level, expressed in number of people.
TTI: Total labors in the industry on provincial level, expressed in number of people.
PTE: Working age population in the country, expressed in number of people.
UES: Economic unit value in the sector, expressed in number of companies/firms.
UEI: Economic unit value in the industry, expressed in number of companies/firms.

A cluster can successfully be formed in a region if the following conditions are true:

1. $CDI > 1$.
2. $CULS > CULI$.

Region of Study

The region of study for the research is the Lahore Division of Punjab, Pakistan. The region was chosen mainly because it has the greatest population (Population Welfare Department, Government of Pakistan, 2017), and the largest number of constructors (Pakistan Engineering Council, 2020).

5. Literature Review

Clusters in simple words is related to a concentration of activity in a specific region. Clustering can be of two types (Perry, 2005) as follows:

- **Functional clustering** arises where companies gain some advantage from being near to each other and these aids explain why the colocation occurs.
- **Physical clustering** exists where industries locate in proximity to each other without any useful associations between them and without any special benefit from their locations.

However, this study is focused on only the formation of Functional Clustering.

Clusters promote both competition and collaboration between businesses. Competitors compete strongly to be successful and make loyal customers. Without the competition, a cluster would not achieve much development. (Porter, 1998).

The importance of the construction industry in Asian Pacific Region can be noted by the fact that in 2020 the global construction output was at 10.7 trillion USD, which is expected to grow by 4.6 trillion USD by 2030. Out of this 4.6 trillion USD, 2.5 trillion USD is expected to be contributed by the Asian Pacific Region which currently holds an estimate of 4.9 trillion USD market (Future of Construction, 2021).

According to a research in the Republic of Uzbekistan, a construction innovation cluster is a production method that brings together contractors in the implementation of a construction. In this process, the interests of all participants are coordinated. This indicates that the supplier of raw materials and all other project member will be responsible for the quality of the end product. (Yusupdjanova & Asadova, 2021).

6. Main Body

According to Pakistan Bureau of Statistics (2021), the estimated working age population is 159.83 million while the number of people employed in the construction industry in Punjab is 2.58 million.

The data for the construction workers in the Lahore division of Punjab is unavailable. However, the working age population of the province Punjab is 56,699,806, and the working age population of the Lahore division is 10,523,580 (Pakistan Bureau of Statistics, 2017).

Hence, using the assumption and equation (1), the number of construction worker in the Lahore Division is estimated to be as follows:

$$WD = (PD/PP) \times (WP)$$

$$WD = (10523580/ 56699806) * (2580000)$$

$$WD = 478852$$

The number of constructors in the sector are 803, while the number of constructors in the industry are 5180 (Pakistan Engineering Council, 2020).

Now, equations (2), (3) and (4) can be used to verify if a cluster can exist in the Lahore Division of Punjab, Pakistan.

<p>TTI = 2580000 TTS = 478852 PTE = 159830000</p>	<p>CDI = $\frac{TTS/TTI}{TTI/PTE} = 11.50$</p>	
<p>UEI = 5180 UES = 803</p>	<p>CULS = $\frac{TTS}{UES} = 596.33$</p>	<p>> CULI = $\frac{TTI}{UEI} = 498.07$</p>

It is to be noted that the above calculated values satisfy the conditions mentioned earlier in the report.

7. Conclusion

From the data above, it can be concluded that a construction cluster can exist in the Lahore Division of Punjab, Pakistan.

Formation of a cluster in the region can have the following advantages (Slaper & Ortuzar, 2015):

- Strengthening of competitiveness by increasing productivity
- Encouragement of new partnerships even among competitors
- Presenting of further opportunities for business activity which can contribute to the country's economy
- Generation of jobs

Formation of construction clusters is important especially in a developing country like Pakistan due to the rapidly growing population and the need of houses, infrastructure, and exploration of resources to provide a sustainable living.

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