

# **The Classification of Districts/Cities in Aceh Province based on the Poor Workers, Zakat Realization, Life Expectancy, Literacy Rate, Average School Years and Per capita Average Expenses from 2011 to 2015**

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## **Abstract:**

*This research aimed to investigate the classification of districts/cities and the distribution of poor workers, zakat realization, life expectancy, literacy rate, average school years, and average per capita expenses in Aceh Province from 2011 to 2015. The data used was from the number of poor workers, zakat realization, and the percentage of life expectancy, literacy rate, average school years, average per capita expenses of 23 districts and cities in Aceh Province from 2011 to 2011. The technique analysis applied was hierarchical clustering based on the similarity measure and proximity technique. The method produced 5 clusters in which the number of districts and cities was ranked 1,2,3,4 and 5. Generally, the level of human resource welfare in the districts and cities in Aceh from 2011 to 2015 was in the middle to lower rank range. The districts and cities having three times lowest rank or more from 2011-2015 were Aceh Selatan, Aceh Timur, Pidie, Bireun, Aceh Barat Daya, Aceh Jaya and Subulussalam. Banda Aceh formed an outlier group that characterized their excellent and different characteristics from other districts and cities in Aceh. Langsa successfully developed its human resource welfare as it moved from the lowest cluster rank to the highest one.*

**Key Word:** Classification, Poor Employess, Zakat, HDI, Aceh

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## **I. Introduction**

The national development was held to improve Indonesians to be welfare, equitable, prosperous, material, and spiritual based on the 1945 Constitution. The national economic development in Indonesia will be started from regions. It is expected to involve the smallest aspects so that thoroughly community can enjoy the benefits. The development needs a multi-dimension complex process to cover the important alterations in accelerating the economic growth, community social structure, unemployment, and poverty management. The development aims to upgrade living standards (income, job vacancy, and education quality) and expand economic and social options (Nasir, 2008). Human resource development has a positive impact on national development and economic growth (workers).

Based on the Republic of Indonesia Constitution about workers, the Year 2003, a worker is every individual or person who can work in order to produce goods and services both to meet their needs and community. Thus, it is essential to have a concern for the workers' welfare.

In the basics values of Islamic economics, justice is the value of rights given in Islamic teaching. Upholding justice and eradicating injustice are the main treatise of the Prophet. Justice is frequently equal to virtue and piety, as mentioned in Surah Al-Maidah [5]:8.

Asy-Syathibi makes an embodiment of mashlahah (satisfaction) as a meeting point between God's intention and human action. The final goal of the law is human mashlahah, or kindness and welfare (Haq, 2007). Generally, justice is defined as equal treatment in law and rights, including obtaining compensation, having a decent life, enjoying the development, having no parties harmed, and having balance in every life aspect. The right is proportionally adjusted to the individual's need, ability, sacrifice, responsibility, or contribution (P3EI, 2013). God created the earth and prepared its components for humans life. As explained in Surah Al-Baqarah [2]: 29.

The utilization of natural resources managed by human resources is the progress benchmark of a region or country. This is clearly stated in Surah Al-Baqarah [2]: 30, humans are managers of natural resources and leaders in this world.

If a region or a country can optimize the natural resources and share the results with people, the human resources can fulfill their life needs. If everyone can satisfy their life necessities, a region or a country can achieve its prosperity. Due to the workers' role and position, it is necessary to develop employment to improve human resource quality and its contribution to the development and increase the protection of workers and their family following human dignity in Islamic Principle.

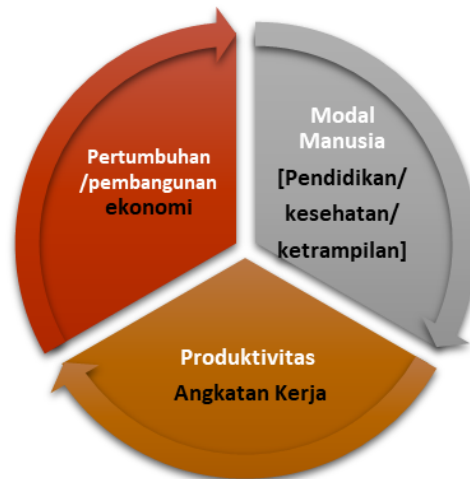
The workers' problems are complex because of many factors: large unabsorbed labor force, low-quality workers, unfair workforce distribution, limited job vacancies, and large unemployment. These problems impact the reduction of the human resource quality that finally causes large numbers of poor people and other negative effects.

The problems should be a concern of the region Government, including the Aceh Province Government. The number of workers in Aceh reached 2,158 million in February 2017 (BPS, 2017). Poverty is a condition of inability in fulfilling basic needs such as food, cloth, home, education, and health.

Mostly, poor people are unemployment or work in informal sectors. Those working in the agricultural sectors are larger than other sectors. In Aceh, 43,63% of Aceh people aged 15 or older are poor workers, and only 15,74% are productive poor workers, and the rest is unemployment (BPS, 2016). This issue is interesting because 15 years of age and older are categorized as productive working citizens. However, the number of poor workers is high.

In increasing human resource prosperity, the government has taken some policies, for example providing direct cash assistance. However, it is not effective due to deficient management and coordination. Therefore, an alternative instrument is needed to overcome the poverty issue. One of them is zakat, infak and sedekah (ZIS) (Beik, 2009). Islam is the only religion paying special attention to eliminating poverty through zakat. Umar bin Abdul Aziz and Harun Al Rasyid are Islamic leaders who successfully implemented the effectiveness of zakat to equalize and improve people's welfare (Firmansyah, 2013).

Zakat is a wealth donation (with certain terms) to particular recipients named *Mustahik* (Hafidhuddin, 2002). As an embodiment of Islamic symbols in creating Islamic Government, Aceh Province has provided an *amil* (zakat collector) institution and decided zakat, infaq, and shadaqah as local revenue sources. The distribution system of zakat is a solution to social problems, such as unemployment, poverty, etc., by assisting the poor regardless of race, skin color, ethnicity, and otherworldly attributes (Al-Qardhawi, 2005). El-Din added that zakat could be functioned as an instrument to alleviate poverty (El-Din, 1986). The condition of welfare, human resource, and free poverty will promote economic performance.



**Figure 1**  
**The cycle of Economic Performance, Human Resources, and Productivity**

Figure 1 describes that there is a link between human capital and workforce productivity, and economic growth. Human development is means of actualizing a prosperous society. Prosperity can be achieved through economic growth; for instance, activities carried out by the government and society to reach a better life (Sukirno, 2004). Human capital is measured by the Human Development Index (HDI) to measure human development achievement based on the number of basic components of life quality. To measure life quality, HDI is established by three basic dimensions. The dimensions are longevity and health, knowledge, and decent life.

The level of human resource is influenced by work sectors closely related to the level of education that affect the number of job opportunities. The level of education is one of the measurement items of the HDI consisting of comparative measurements of life expectancy, literacy rate, education, the living standard of all countries in the world. The indicator of HDI is considered to reflect human resources of some indicators, such as life expectancy, average school years, and average per capita expenses. The school life expectancy and the average school years can represent the role of education in job vacancies and sectors. The per capita expenses indicator is considered to be able to reflect the life needs of poor workers. Premis complexity explained that the relationship and the interaction of a variable in a system are complex and comprehensive. A variable indicator becomes a causative factor and influences other variables and vice versa (Zulhilmi, 2015). The revenue earned by human resources might be less than the cost of life necessities.

Because of several mistakes in overcoming the human resource problems, the strategies have to prioritize not only economic aspects but also other dimensions to alleviate poor workers, optimize zakat realization fund, and increase human capital. Accordingly, this research applied classification analysis of regions and cities to reach human resource development in Aceh Province fairly.

## II. Literature Review

### Poor Workers

A poor worker is the combination of two words, namely worker and poor. A worker is part of an employment unit.



**Figure 2**  
**Employment Concept**

Based on the employment concept, the working citizens are called workers; they are classified as productive and poor workers (BPS, 2016). The poor citizens are mostly not working or working in informal sectors.

Poverty is a condition in which a person lacks financial resources and a low-income level; moreover, low levels of health and education, high risk of criminality, the injustice of law treatment, and the inability to decide their lives (Suryawati, 2005). A poor worker is defined as a worker who cannot meet the basic needs, including food and non-food, measured based on expenses.

### Zakat

The word zakat has an etymology meaning developing (*an-namaa*), cleaning (*at-thaharatu*), and blessing (*albarakatu*). The terminology of zakat means giving some of one's wealth (with certain terms) to be shared to the particular recipients known as *Mustahik* (Hafidhuddin, 2002).

Al-Qaradawi asserted that the basic purpose of zakat is solving various social problems such as unemployment, poverty, etc. The distribution system of zakat is a solution to the problems by assisting the poor regardless of race, skin color, ethnicity, and otherworldly attributes (Al-Qardhawi, 2005).

The zakat reference can be found in Surah Al-Taubah [9]: 60. The donation plays an important role in religion and social life, economic life, and the financial structure of Islamic country. Zakat focused on social welfare and other welfare sectors, such as education, health, and other social services (Chaudry, 2012).

### Human Development Index

Mankiw cited in Nurmainah (2013) claimed that human capital is knowledge and capability gained through education, starting from children's programs to job training for adult workers. As physical capital,

human capital can develop the ability to produce goods and services. To upgrade the human capital level, investment in teachers, libraries, and learning time is necessary.

According to United Nations Development Programme (UNDP), HDI has three composite indicators to measure the average achievement of a country in human development: life expectancy, measured by the number of life expectancy at birth, education, measured by the average school years, and the literacy rate of citizens aged 15 and older, the living standard, measured by per capita expenses adjusted to the purchasing power.

### **Life expectancy**

Life expectancy is an estimate of one's average age can expect to live. Life expectancy becomes an HDI indicator in measuring individual health achievement in a region. Life expectancy can be defined as the average age achieved by an individual based on the year of its birth. Indirect estimation is used to calculate life expectancy. Data used to calculate the life expectancy consist of AnakLahirHidup (ALH) danAnakMasihHidup (AMH). It used the maximum value life expectancy of the UNDP standard to calculate the life expectancy index, 85 years is the highest life expectancy as the upper limit for calculating the index, and 25 years is the lowest.

### **Literacy Rate**

The literacy rate is an indicator of fair social welfare by analyzing the high and low percentage of literate populations. The literacy rate can be a criterion in investigating the basic capabilities of human resources to achieve a prosperous country. It is the ratio between the numbers of citizens aged 15 and older who can read/write and the number of citizens aged 15 and older. The maximum limit of literacy rate is 100; meanwhile, the minimum limit is 0. This means that 100% of citizens can read and write and vice versa.

### **Average school years**

The average of school years is used to examine the level of individual education or indicate how high the education achieved by the community in a region. The high average school years indicate a high education level. The assumption of the average school years variable is the higher individual's education level, the better individual's quality, both in terms of mindset and action. Higher education individual measured by school years has better job opportunities and salaries than those with lower education. Average school years means the numbers of years spent by individual aged 15 or older to obtain a formal education. Fifteen years is the maximum limit of average school years that indicate the maximum education targeted is senior high school. Meanwhile, 0 year is the minimum limit.

### **Per capita expense**

Per capita expense is the cost of monthly food and non-food consumption divided by the number of family members. The Per capita expense describes the purchasing power parity of the community as one of the components used to check the human development status in a region. Also, it is to compare real prices between the province and districts/cities as the exchange rate that can be used to alleviate and develop the purchasing power measured by adjusting per capita consumption. The expense data reflects the family consumption pattern in general so that it can be the measurement to evaluate the level of population economic welfare (BPS, 2017).

## **III. Material And Methods**

### **Research Type**

The research method applied in this study was quantitative analysis. It emphasized its analysis of numerical data or numbers obtained by statistical methods. It is explanatory research that explains the variables studied. This study analyzed the number of poor workers interaction, zakat realization, and human development index indicators, namely life expectancy, literacy rate, average school years, and average per capita expenses. It aimed to classify  $n$  unit of observation to  $k$  group so that the observation units in one group have homogenous characteristics than those in the other group (Mattjik, 2002).

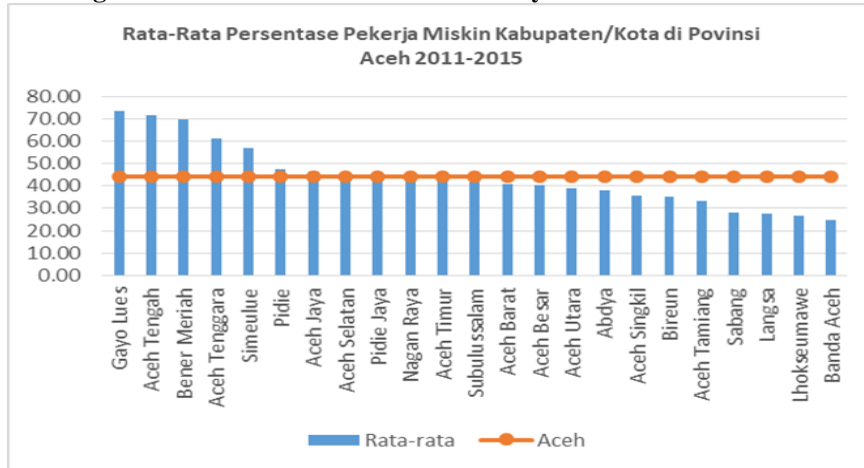
### **Data Collection Type and Technique**

The type of data used in this research was ratio data gained in numbers, namely time series data and cross-section. The time-series data was 2011-2015, and the cross-section data were from 23 districts and cities in Aceh. The source of data in this study was secondary data. The data was collected from other sources and gathered from other parties, such as literature books, notes, and government publication data, such as a report from the Central Statistics Agency (BPS) or other sources related to this study. The data collected from BPS consisted of poor workers, the zakat realization, the percentage of life expectancy, literacy rate, average school years, and average per capita expenses.

It can be concluded that the data collection technique used in this study was a secondary data source gathered from the Central Statistics Agency and other sources which is related to this research.

#### IV. Results and Discussion

##### The Average Percentage of Poor Workers in The District/City in Aceh Province 2011-2015



Source: The Central Statistics Agency (BPS), 2011-2015 (processed)

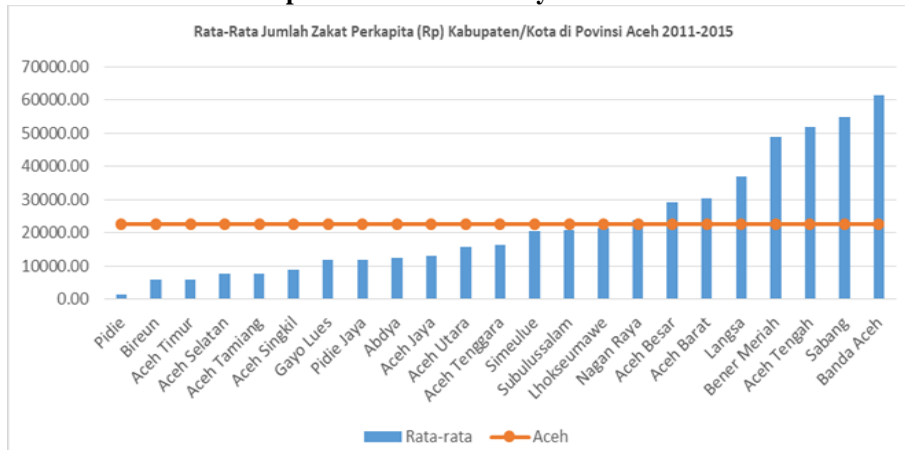
Figure 3

##### The Average Percentage of Poor Workers in Districts/Cities of Aceh Province in 2011-2015

Figure 3 reveals that the average percentage of poor citizens in the districts/cities in Aceh Province from 2011 to 2015 was 44.12%. Gayo Lues District had the highest average percentage of poor workers than the others in Aceh Province (73.47%).

With an area of 5.719 km<sup>2</sup> and consisting of 11 sub-districts and 145 urban villages, Gayo Lues district is one of the districts in Aceh resulting from the division of Southeast Aceh District (based on Law no. 4 of 2002 on April 10, 2002). This district is the most isolated in Aceh. The center of government of Gayo Lues is controlled by Cinta Maju Village and the economic center in the capital city of Blangkejeren.

##### The Average Amount of Zakat Per Capita in the District/City in Aceh Province 2011-2015



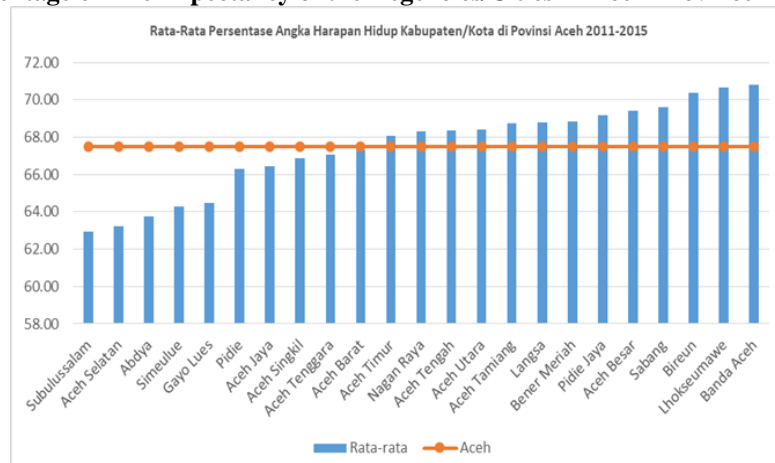
Source: Central Bureau of Statistics (BPS), 2011-2015 (analyzed)

Figure 5

##### The Average Amount of Zakat in District/City in Aceh Province in 2011-2015

Figure 5 shows the average realization of zakat per capita for each district/city in Aceh Province from 2011 to 2015 (22.537.26 rupiah). The figure also reveals that the lowest zakat realization per capita is in Pidie District (1,471.71 rupiahs), and the highest amount of zakat realization per capita is in Banda Aceh City (61,247.35 rupiahs).

**The Average Percentage of Life Expectancy of the Regencies/Cities in Aceh Province 2011-2015**

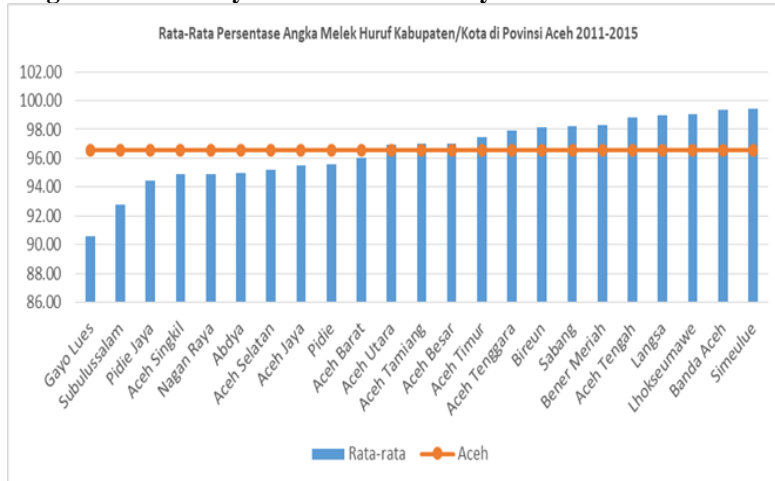


Source: Central Bureau of Statistics (BPS), 2011-2015 (analyzed)

**Figure. 7**  
**The Average Percentage of Life Expectancy of the Regencies/Cities in Aceh Province 2011-2015**

Figure 7 indicates that the average percentage of life expectancy for each district/city in Aceh Province from 2011 to 2015 is 67.49. The figure also reveals that the district/city with the lowest percentage of life expectancy is Subulussalam (62.93 years), meaning that the average age of Subulussalam population is around 62.93 years. Meanwhile, Banda Aceh has the highest percentage of life expectancy (70.80 years).

**The Average Percentage of the Literacy Rates of District/City in Aceh Province in 2011-2015**

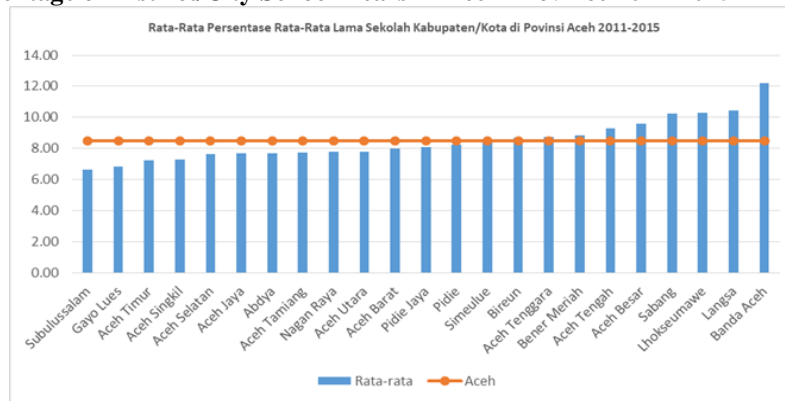


Source: Central Bureau of Statistics (BPS), 2011-2015 (analyzed)

**Figure 8**  
**The Average Percentage of the Literacy Rates of District/City in Aceh Province in 2011-2015**

Figure 8 shows that the average literacy rate for each district/city in Aceh Province from 2011 to 2015 is 96.59%. The figure also indicates that the district/city with the lowest percentage of literacy rates is Gayo Lues District (90.59%), while the highest is Simeulue District (99.41%).

**The Average Percentage of District/City School Years in Aceh Province 2011-2015**

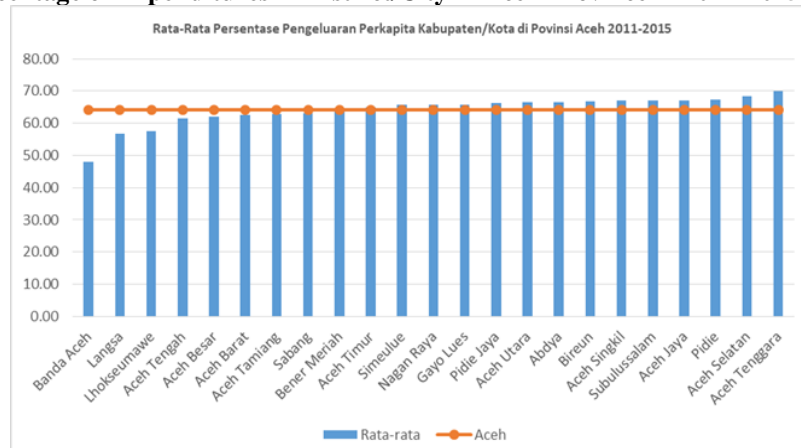


Source: Central Bureau of Statistics (BPS), 2011-2015 (analyzed)

**Figure. 9**  
**The Average Percentage of District/City School Years in Aceh Province 2011-2015**

Figure 9 shows the average percentage of school years in each district/city in Aceh Province from 2011 to 2015 (8.50 years). It can be seen that Subulussalam has the lowest percentage of average school years (6.63 years), indicating the average years for studying that has been completed by residents of Subulussalam of 15 years and older informal education is 6.63 years. Meanwhile, Banda Aceh has the highest percentage of school years (12.20 years).

**The Average Percentage of Expenditures in District/City in Aceh Province in 2011-2015**



Source: Central Bureau of Statistics (BPS), 2011-2015 (analyzed)

**Figure 10**  
**The Average Percentage of Expenditures in District/City in Aceh Province in 2011-2015**

Figure 10 presents the average percentage of district/city expenditure per capita in Aceh Province from 2011-2015 (64.03%). The figure indicates that Banda Aceh has the lowest percentage of per capita expenditure (47.90%), while the highest is in Southeast Aceh District (70.02%).

**The Classification of Regencies/Cities in Aceh Province in 2011**

The cluster analysis results for the average data of 23 districts/cities concerning the number of poor workers, zakat realization rates, life expectancy, literacy rates, average school years, and per capita expenditure in 2011 are as follows.

1. Cluster I consists of Simeulue District, Aceh Singkil District, South Aceh District, Southeast Aceh District, East Aceh District, Aceh Besar District, Pidie District, Bireun District, North Aceh District, Southwest Aceh District, Gayo Lues District, Aceh Tamiang District, Aceh Jaya District, Langsa and Subulussalam
2. Cluster II consists of Central Aceh District and Bener Meriah District
3. Cluster III consists of Aceh Barat District, Nagan Raya District, Pidie Jaya District and Lhokseumawe
4. Cluster IV consists of Banda Aceh
5. Cluster V consists of Sabang

The differences between each cluster are illustrated in the map of districts/cities in Aceh Province presented in Figure 11.



**Figure 11**  
**The Cluster Ranking of Districts/Cities in Aceh Province in 2011**

Figure 11 shows that most districts/cities in the province of Aceh in 2011 were dominantly at the fifth ranking. The districts/cities in red are the areas with the lowest ranking based on the classification using the six variables studied.

Using the voting method, cluster IV is the first rank, followed by cluster V, cluster II, cluster III, and cluster I as the second, third, fourth, and fifth rank.

**The Classification of Regencies/Cities in Aceh Province in 2012**

The cluster analysis results for the average data of 23 districts/cities concerning the number of poor workers, zakat realization rates, life expectancy, literacy rates, average school years, and per capita expenditure in 2012 are as follows.

1. Cluster I consists of Simeulu District, Southeast Aceh District, Subulussalam and Nagan Raya District.
2. Cluster II consists of Aceh Singkil District, South Aceh District, East Aceh District, Pidie District, Bireun District, North Aceh District, Southwest Aceh District, Gayo Lues District, Aceh Tamiang District, Aceh Jaya District, Pidie Jaya District, Langsa and Lhokseumawe.
3. Cluster III consists of Central Aceh District, West Aceh District, Aceh Besar District, and Bener Meriah District.
4. Cluster IV consists of Banda Aceh
5. Cluster V consists of Sabang

Figure 12 illustrates the differences between each cluster are illustrated in the map of districts/cities in Aceh Province.



**Figure 12**  
**The Cluster Ranking of Districts/Cities in Aceh Province in 2012**



Figure 12 shows that most districts/cities in the province of Aceh in 2012 were dominantly at the fourth ranking. The districts/cities in red are the areas with the lowest ranking based on the classification using the six variables studied.

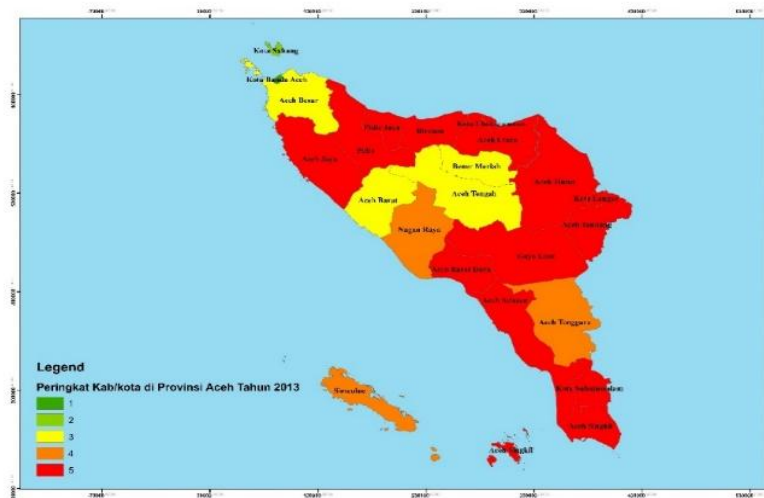
Similarly to data of 2011, using the voting method, it was found cluster IV is the first rank, followed by cluster V, cluster II, cluster III, and cluster I as the second, third, fourth, and fifth rank.

### **The Classification of Regencies/Cities in Aceh Province in 2013**

The cluster analysis results for the average data of 23 districts/cities concerning the number of poor workers, zakat realization rates, life expectancy, literacy rates, average school years, and per capita expenditure in 2013 are as follows.

1. Cluster I consists of Simeulue District, Southeast Aceh District and Nagan Raya District
2. Cluster II consists of Aceh Singkil District, South Aceh District, East Aceh District, Pidie District, Bireun District, North Aceh District, Southwest Aceh District, Gayo Lues District, Aceh Tamiang District, Aceh Jaya District, Pidie Jaya District, Langsa, Lhokseumawe and Subulussalam
3. Cluster III consists of Central Aceh District, West Aceh District, Aceh Besar District, and Bener Meriah District
4. Cluster IV consists of Banda Aceh
5. Cluster V consists of Sabang

Figure 13 illustrates the differences between each cluster are illustrated in the map of districts/cities in Aceh Province.



**Figure 13**  
**The Cluster Ranking of Districts/Cities in Aceh Province in 2013**

Figure 13 shows that most districts/cities in the province of Aceh in 2013 was dominantly at the fifth ranking. The districts/cities in red are the areas with the lowest ranking based on the classification using the six variables studied.

Similar to data from previous years, using the voting method, cluster IV is the first rank, followed by cluster V, cluster III, cluster I and cluster II as the second, third, fourth, and fifth rank.

### **The Classification of Regencies/Cities in Aceh Province in 2014**

The cluster analysis results for the average data of 23 districts/cities concerning the number of poor workers, zakat realization rates, life expectancy, literacy rates, average school years and per capita expenditure in 2014 are as follows.

1. Cluster I consists of Simeulue District, West Aceh District, Aceh Besar District, Lhokseumawe and Subulussalam
2. Cluster II consists of Aceh Singkil District, East Aceh District, Pidie District, Bireun District, Gayo Lues District, Aceh Tamiang District, Pidie Jaya District and Sabang.
3. Cluster III consists of South Aceh District, Southwest Aceh District and Aceh Jaya District.
4. Cluster IV consists of Southeast Aceh District, North Aceh District, Nagan Raya District and Langsa.
5. Cluster V consists of Central Aceh District, Bener Meriah District and Banda Aceh

The differences between each cluster are illustrated in the map of districts/cities in Aceh Province are described in Figure 14.



**Figure 14**  
**The Cluster Ranking of Districts/Cities in Aceh Province in 2014**

Figure 14 shows that most districts/cities in the province of Aceh in 2014 were dominantly at the fourth ranking. The districts/cities in red are the areas with the lowest ranking based on the classification using the six variables studied.

Similarly to data from 2014, the voting method was used for ranking, indicating that cluster V is the first rank, followed by cluster IV, cluster I, cluster II and cluster III as the second, third, fourth, and fifth rank.

#### **The Classification of Regencies/Cities in Aceh Province in 2015**

The cluster analysis results for the average data of 23 districts/cities concerning the number of poor workers, zakat realization rates, life expectancy, literacy rates, average school years and per capita expenditure in 2015 are as follows.

1. Cluster I consists of Simeulue District, Southeast Aceh District, North Aceh District, Southwest Aceh District, Gayo Lues District, Aceh Tamiang District, Nagan Raya District, Aceh Jaya District and Pidie Jaya District.
2. Cluster II consists of Aceh Singkil District, South Aceh District, East Aceh District, West Aceh District, Pidie District, and Bireun District.
3. Cluster III consists of Central Aceh District, Bener Meriah District, Banda Aceh, and Sabang.
4. Cluster IV consists of Aceh Besar District, Lhokseumawe and Subulussalam .
5. Cluster V consists of Langsa.

The differences between each cluster are illustrated in the map of districts/cities in Aceh Province are described in Figure 15.



**Figure 15**  
**The Cluster Ranking of Districts/Cities in Aceh Province in 2015**

Figure 15 shows that most districts/cities in the province of Aceh in 2015 were also dominantly at the fourth ranking. The districts/cities in red are the areas with the lowest ranking based on the classification using the six variables studied.

Similar to data from previous years, the voting method was used for ranking, indicating that cluster V is the first rank, followed by cluster III, cluster IV, cluster I, and cluster II as the second, third, fourth, and fifth rank.

## V. Conclusion

Overall, this study interprets the welfare of human resources based on the cluster analysis results of 23 districts/cities in Aceh Province. The data employed were the average of poor workers, zakat realization rate, percentage of life expectancy, percentage of literacy rate, percentage of school years, and the percentage of per capita expenditure from 2011 to 2015. The hierarchical clustering method resulted in five clusters with districts/cities ranked as 1 to 5.

Looking at regional shifts through visual analysis of the output cluster for the average data of 23 districts/cities in Aceh Province in 2011-2015 shows the same trend. It shows that Banda Aceh forms an outlier group. Based on the variable number of workers poverty, zakat realization rate, percentage of life expectancy, percentage of literacy rate, the percentage of the average length of schooling and percentage of expenditure per capita, Banda Aceh is superior and different districts/cities in Aceh Province. Langsa Cs an area in Aceh Province that is considered successful in building human resource welfare. It managed to crawl forward from the lowest cluster rank to the highest cluster rank. In general, districts/cities in Aceh Province from 2011-2015 have a level of human resource welfare in the middle to lower rank range. The year 2014 was a period that showed positive changes, which were proven based on a visual map that showed that only 3 (three) areas were included in the red zone, namely South Aceh District, Southwest Aceh District, and Aceh Jaya District. The districts/cities that ranked the lowest 3 (three) times or more in the 2011-2015 period were South Aceh District, East Aceh District, Pidie District, Bireun District, Southwest Aceh District, Aceh Jaya District, and Subulussalam.

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