



IS STRUCTURAL ECONOMIC TRANSFORMATION FROM AGRICULTURE TO INDUSTRY OCCURRING ON SULAWESI ISLAND?

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Abstract. Structural economic transformation, particularly the shift from agriculture-based activities toward industrial and service-oriented sectors, is a key indicator of regional development. This study aims to examine whether structural transformation from the agricultural sector to other economic sectors has occurred on Sulawesi Island, Indonesia. The study employs secondary data in the form of Gross Regional Domestic Product (GRDP) at constant prices for Sulawesi Island and its provinces during the period 2010–2024, obtained from Statistics Indonesia (BPS). A descriptive quantitative approach is used to analyze changes in sectoral contributions to regional economic structure. The results indicate that Sulawesi Island has experienced a decline in the contribution of the agricultural sector, accompanied by an increase in the manufacturing, information and communication, and trade sectors. The direction and magnitude of structural transformation vary across provinces, resulting in three distinct transformation patterns: (1) a shift from the primary sector toward secondary and tertiary sectors, (2) a concentration of transformation toward the secondary sector, and (3) a shift toward the tertiary sector. These findings suggest that structural transformation in Sulawesi Island is occurring unevenly across regions and is strongly influenced by regional economic characteristics and development policies. The results provide important insights for regional development planning and sectoral policy formulation in Sulawesi Island.

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INTRODUCTION

Globalization is the term most commonly used to describe the current era. It refers to the emergence of a series of processes related to the rapid movement of ideas, goods, and people across the world, which radically changes the relationships between people and communities across national

borders (Rizvi, 2007). The flow of technology, ideas, and information between countries and cultures can easily be exchanged in the era of globalization, driving transformation. Advances in communication technology have enabled instant communication worldwide, changing the way we work, communicate, and interact with each other. This has allowed for cross-border collaboration in fields such as business innovation, scientific research, and technological development. The availability of technology and innovation plays a crucial role in enhancing economic performance during this transformation (Hollander & Garibay, 2011). Transformation can occur in various areas of life, such as education, economy, social, culture, and politics.

Economic transformation itself refers to an effort to improve certain economic thinking to renew or form a better economic system (Risza, 2014). Economic transformation, especially in low and middle-income countries, is a complex process involving the transition from a rural to an urban economy, accompanied by demographic changes (Mellor, 2017). Structural transformation is a hallmark of economic development, during which some sectors grow faster than others (Mecik & Afsar, 2014). Economic transformation can have a significant impact on a country's economic development. Economic transformation refers to fundamental changes in a country's economic structure from one form to a more modern, efficient, and diverse form. The impact of economic transformation on economic development can vary depending on the nature and direction of the transformation undertaken. Regional economic development is adjusted to regional economic capabilities (Hascaryo & Soebagiyo, 2015).

Indonesia's economic transformation involves efforts to reduce dependence on dominant economic sectors, such as agriculture and commodities, and to promote growth in manufacturing, services, tourism, and information technology. Economic transformation also aims to reduce dependence on natural resource sectors (Widayati et al., 2023). Structural transformation is characterized by a decrease in the share of the agricultural (primary) sector and an increase in the share of the industrial sector (Rustariyun & kartika, 2015). Economic transformation is a process of changing the economic structure from the agricultural sector to the industrial or service sectors, where each sector will experience different transformation processes. The process of changing the economic structure is sometimes interpreted as industrialization. This is consistent with what (Mellor, 2017) explained that transformation often involves a shift from a predominantly rural and agrarian country to one where the majority of the population is urban, with urban industries and services dominating the economy.

Developing countries can transform their economic structure from traditional subsistence agriculture (with low productivity) to a more modern economy (with high productivity) (Rinaldi, Erfit, & Rosmeli, 2022). Structural transformation in developing countries, mostly in the 1900s, involved varying processes, sometimes not too slow and sometimes sudden (Divanbeigi, Paustian, & Loayza, 2016). Indonesia is one of the countries listed as developing (Yusuf, 2023), this condition allows for the mechanism of structural economic transformation in Indonesia.

In recent decades, the land area used for agricultural production in Indonesia has increased to 32% of the total land area. Agriculture still plays a significant role in Indonesia's economy, contributing 14% of GDP and being the second-largest source of employment, with about 33% of workers in rural areas (FAO, 2018). The economic conditions of Indonesia in 2022 vary for each island: Java has the manufacturing sector as the largest contributor to its GDP at 28.33%; Sumatra's agriculture sector at 23.02%; Kalimantan's mining and quarrying sector at 32.29%; Papua's mining and quarrying sector at 36.61%; and Sulawesi's agriculture sector at 21.43% (BPS, 2023).

Sulawesi Island still has the agricultural sector as the largest contributor to its GDP in 2022. However, its contribution value has been steadily declining, with contributions of 27.7%, 24.8%, and 22.5% in 2010, 2015, and 2020, respectively (BPS, 2023). This condition illustrates the initial phase of structural transformation, with a decline in the primary sector's contribution, namely agriculture. It

is necessary to determine to which sectors the decline in the agricultural sector's contribution has been redistributed. Therefore, it is essential to understand whether structural economic transformation has occurred on Sulawesi Island from the agricultural sector to the industrial sector.

Previous studies on Indonesia's structural economic transformation have predominantly focused on national-level analysis or individual provinces, with limited attention to interprovincial dynamics within a single island region. In addition, most existing studies emphasize changes in sectoral contributions without systematically identifying structural transformation direction and distribution patterns across economic sectors. Therefore, this study fills these gaps by providing a comprehensive analysis of structural transformation on Sulawesi Island using updated GRDP data and by classifying transformation patterns across provinces based on shifts in primary, secondary, and tertiary sectors. This research is necessary, considering that the results can be used as a basis for subsequent policy decisions and for the preparation of the spatial development plan for the next period.

METHOD

The research location was chosen deliberately (purposive). Purposive sampling is a sampling method based on specific considerations or selection with a particular purpose (Elvera & Astarina, 2021). The chosen research location is Sulawesi Island, considering that the agricultural sector is still the largest contributor to the island's GRDP (21,43%). Additionally, Sulawesi Island was selected because it is the fourth largest island in Indonesia and the eleventh largest in the world (Aninsi, 2021). The scope of the research covers Sulawesi Island, Indonesia, which consists of six provinces: South Sulawesi, Central Sulawesi, Southeast Sulawesi, North Sulawesi, West Sulawesi, and Gorontalo. The detailed map of the research location can be seen in Figure 1.

The type of data used in this research is secondary data sourced from BPS (Badan Pusat Statistik) in the form of gross regional domestic product (GRDP) for each province in Sulawesi Island and the national GDP (Gross Domestic Product) at Constant Prices (ADHK). The data was collected from 2010 to 2024. The analytical method used to determine the shift in the agricultural sector's contribution is descriptive quantitative analysis with the aid of Microsoft Excel software. The data is then summarized and presented in graphical form for ease of understanding. The analytical method used in this study to determine whether structural transformation has occurred in Sulawesi Island is based on previous research considerations, which explain that structural transformation in an economy can be observed from the sectoral contributions of each sector to the formation of GRDP (Romli, Hutagaol, & Priyarsono, 2016).



Source : Research data

Figure 1. Research location

The unit of analysis is the sectoral contribution to GRDP (percentage), which reflects the relative role of each economic sector in forming the regional economy. Economic sectors are grouped into three main categories: primary, secondary, and tertiary sectors for analytical purposes. The analysis is conducted in several stages. First, the contribution of each economic sector to the total GRDP of Sulawesi Island and its provinces is calculated for each year of observation. Second, changes in the agricultural sector's contribution as the main primary sector, are examined to identify potential declines or shifts in its economic role. Third, economic sectors that experience increasing contributions are identified as the main recipients of structural shifts in the regional economy.

Furthermore, the direction and distribution of changes in sectoral contributions are analyzed to determine whether structural economic transformation has occurred. Based on these results, structural transformation patterns are classified by examining the flow of shifts from the primary sector toward the secondary and/or tertiary sectors. The findings are presented in tables and graphical illustrations to facilitate interpretation and are subsequently discussed using a descriptive and comparative approach across provinces, with reference to previous studies and regional economic development policies.

RESULT AND DISCUSSION

Structural Transformation of the Economy of Sulawesi Island

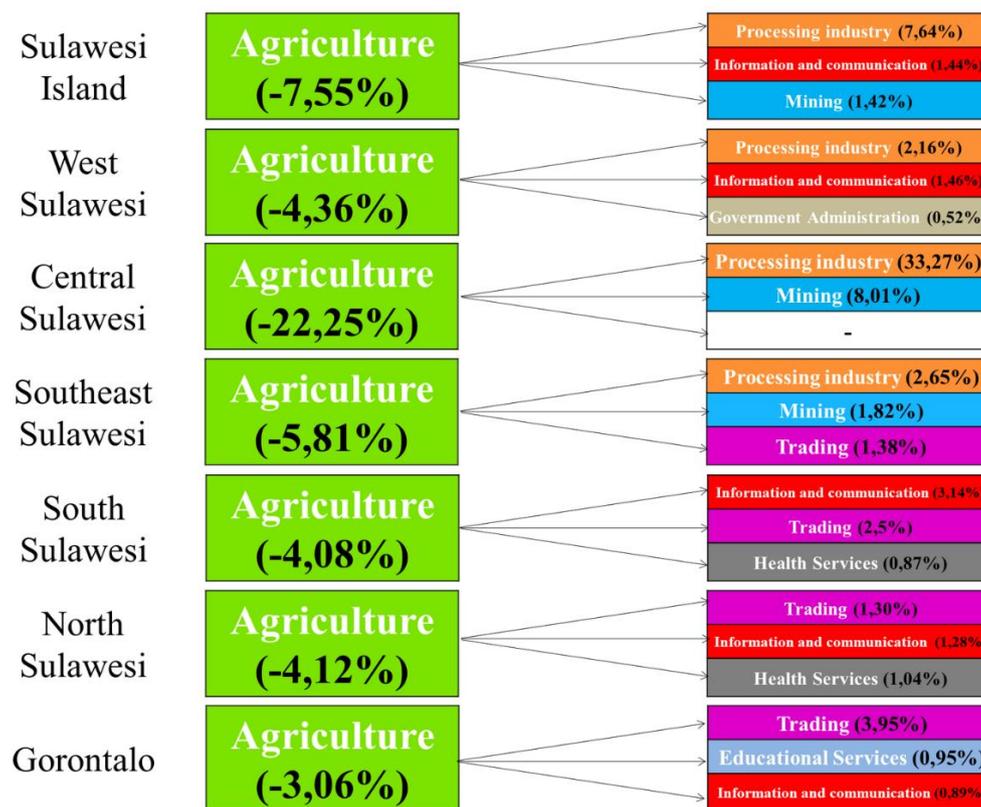
Economic transformation refers to the improvement of certain economic paradigms to renew or form a better economic system (Risza, 2014). Indonesia's economic transformation involves efforts to change the existing economic structure towards a more sustainable, inclusive, and highly competitive pattern. This transformation aims to achieve higher economic growth, improve public welfare, and reduce economic disparities. Indonesia's economic transformation involves efforts to reduce dependence on dominant economic sectors, such as agriculture and commodities, and to promote the growth of other sectors such as manufacturing, services, tourism, and information technology. The transformation also aims to reduce reliance on natural resource sectors (Widayati, et al., 2023). The condition of the structural economic transformation in Sulawesi Island is detailed in Figure 2.

Based on the descriptive quantitative analysis of sectoral GRDP contributions as outlined in the methodology section, the results indicate a consistent decline in the contribution of the agricultural sector across Sulawesi Island and its provinces during the period 2010–2024. This decline is accompanied by an increase in the contribution of non-agricultural sectors, particularly manufacturing, information and communication, and trade. Such changes reflect an ongoing structural transformation in which economic activities gradually shift away from primary-sector dominance.

The transformation, however, does not occur uniformly across provinces. In Central Sulawesi, the most significant shift is directed toward the manufacturing sector. This change can be explained by the expansion of mineral processing industries following the implementation of downstream industrial policies, which increased value-added activities and attracted large-scale investment. Similar findings regarding the role of industrialization in driving structural transformation have been reported by Mellor (2017) and Rinaldi et al. (2022), who emphasize the importance of the secondary sector as a catalyst for economic restructuring in developing regions.

In Figure 2, it can be seen that the agricultural sector in all provinces and Sulawesi Island as a whole has experienced a decline in contribution, indicating a gradual shift or structural transformation in the economic sectors, marked by a decrease in the share of the primary sector. This decrease in the primary sector's share has been redistributed to other sectors, both secondary and tertiary, resulting in increased contributions from these other sectors. As shown in Figure 2, each province and Sulawesi Island have different sectors experiencing increased contributions. The decline in the agricultural

sector's contribution in each region has been redistributed mainly to the secondary sector, such as manufacturing, and to the tertiary sector, such as information and communication and trade.



Source : Research data

Figure 2. Structural transformation of the Sulawesi Island economy

Central Sulawesi is the province with the largest decline in the agricultural sector's contribution compared to other provinces. From 2010 to 2022, Central Sulawesi experienced a 22.25% decrease in the agricultural sector's contribution. This decline in the agricultural sector's contribution in Central Sulawesi was accompanied by an increase in the manufacturing sector's contribution by 33.27% and the trade sector by 8.01%. The manufacturing sector's contribution in Central Sulawesi is the largest compared to other provinces. The rise in the contribution of the manufacturing sector in Central Sulawesi is mainly driven by the processing industry. This increase is particularly driven by the addition of nickel pig iron (NPI) production capacity with 5 RKEF lines, including 4 additional lines at PT Gunbuster Nickel Industry in North Morowali Regency and 1 line at PT Qingdao Zhongcheng in Morowali Regency (Bank Indonesia, 2022).

The significant transformation in Central Sulawesi has played a role in influencing the structural economic transformation of Sulawesi Island, where the largest redistribution from the decline in Sulawesi Island's agricultural sector was directed by 7.64% toward the secondary sector, specifically the manufacturing industry. This indicates that Sulawesi Island has also undergone a transformation or shift in its economic structure from the primary sector to the secondary sector. The shift in the economic structure of Sulawesi Island toward the manufacturing sector aligns with Indonesia's overall economic structural transformation. The sector contributing the most to Indonesia's GDP is the industrial sector at 22.31%, followed by the agricultural sector at 14.59%, and the trade sector at 13.08% (Rinaldi, Erfit, & Rosmeli, 2022)

The transformation of Sulawesi Island from the agricultural sector to the industrial sector has had a positive impact on the economic structure of the island. This is supported by research findings indicating that regions where the primary sector, such as agriculture, forestry, and fisheries, as well as mining and quarrying dominates tend to have a high dependency status or are not yet self-sufficient (Kurniawan, Endaryanto, & Haryono, 2023). The results of this study show that with the decline in the dominance of the primary sector and the shift towards the tertiary sector, these regions will become more self-sufficient and reduce their dependency. On the other hand, not all structural transformation processes mean that everything will proceed smoothly. Any ongoing process inevitably brings both positive and negative consequences. A successful structural transformation should be accompanied by a decrease in population growth rate, equal employment opportunities, and a reduction in the urban-rural economic dualism, leading to simultaneous increases in income and income equality (Kuncoro, 2010); (Rinaldi, Erfit, & Rosmeli, 2022).

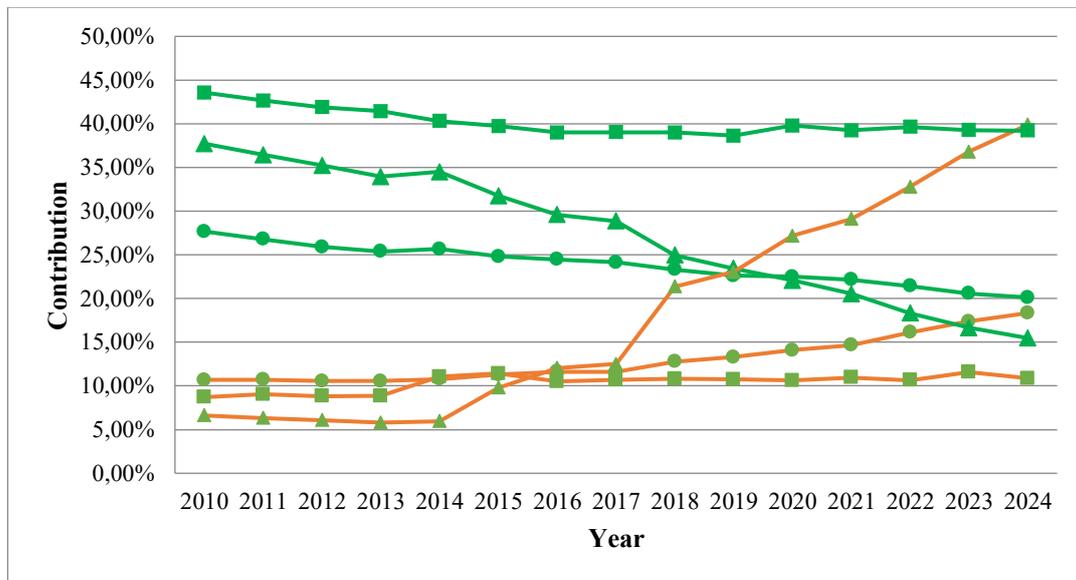
Based on Figure 2, three sectors experienced the largest increase in contribution during the period from 2010 to 2024. This increase occurred due to the decline in the contribution of the agricultural sector. Manufacturing, information and communication, and wholesale and vehicle repair trade are the three economic sectors. Sulawesi Island, West Sulawesi, and Central Sulawesi experienced the most significant transformation towards the manufacturing sector. South Sulawesi and North Sulawesi experienced a transformation towards the information and communication sector. Southeast Sulawesi and Gorontalo experienced a transformation towards the wholesale and vehicle repair trade sector. The shifts in these three sectors over the period from 2010 to 2024 are detailed in Figures 3, 4, and 5.

The transformation from the agricultural sector to the manufacturing sector is a dominating process that is simultaneously evident in three regions simultaneously: Sulawesi Island, Central Sulawesi, and West Sulawesi. Central Sulawesi is the province that most dominates this transformation process, as seen in Figure 3. The contribution of the agricultural sector has consistently declined from 2010 to 2024, while the manufacturing sector has consistently increased its contribution to the provincial GRDP. The increase in the contribution from the manufacturing sector began to rise drastically in 2015, supported by the fact that the manufacturing industry experienced the highest growth of 89.99% in economic growth in quarters I-IV 2015 compared to quarters I-IV 2014 (BPS Sulawesi Tengah, 2016).

Since 2015, the economic structure of Central Sulawesi, dominated by agriculture, has started to change. The manufacturing sector has continued to increase its contribution since that year. Government policies at the beginning of 2014 banning the export of raw minerals, including nickel, abroad led to this change. The government aimed to increase value-added by processing semi-finished products domestically or newly downstream products for export. Consequently, China decided to invest in Indonesia by building two smelters in Morowali Regency: PT Sulawesi Mining Investment and PT Indonesia Morowali Industrial Park. After the completion and production of the smelters in 2015, the role of the manufacturing sector gradually increased in Central Sulawesi's economy. Eventually, in 2019, the GRDP reached 185.74 trillion rupiahs, with the agricultural sector accounting for 23.2% and the manufacturing sector for 22.42% (Fadli, 2021).

The increasing role of the manufacturing sector can be seen in Figure 3, where in 2019, the manufacturing and agricultural sectors intersected. The agricultural sector continued to decline in contribution, while the manufacturing sector continued to increase, resulting in their intersection in 2019. This indicates that Central Sulawesi has undergone structural transformation from the agricultural sector to the manufacturing sector since 2019. When focusing on the structural transformation of Sulawesi Island, Figure 3 shows that Sulawesi Island has also transformed from the agricultural sector to the manufacturing sector. The continuous decline in the contribution of the agricultural sector alongside the growth of the industrial sector persisted until 2024. The intersection of these two sectors

in 2024 indicates that Sulawesi Island has experienced an economic transformation from agriculture toward the manufacturing industry sector. This is supported by the fact that in the second quarter of 2023, Sulawesi Island experienced the highest economic growth among the islands, at 6.64%, dominated by the industrial and mining sectors (BPS Gorontalo, 2023).



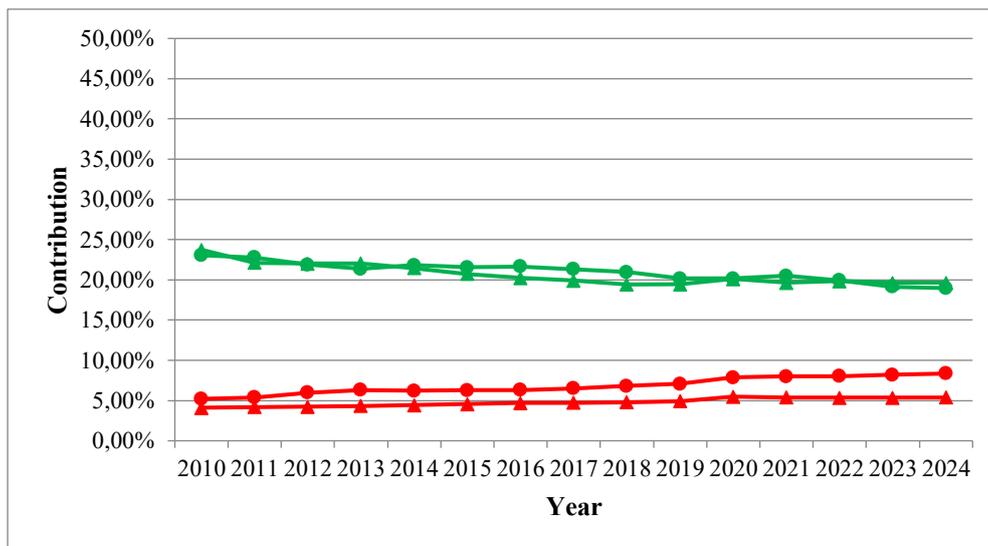
Source : Research data

Figure 3. Transformation of the agricultural sector into the processing industry sector

Information:

- = Sulawesi Island
- = West Sulawesi
- △ = Central Sulawesi

- Green : Agriculture
- Orange : Processing industry



Source : Research data

Figure 4. Transformation of the agricultural sector into the information and communication sector

Information

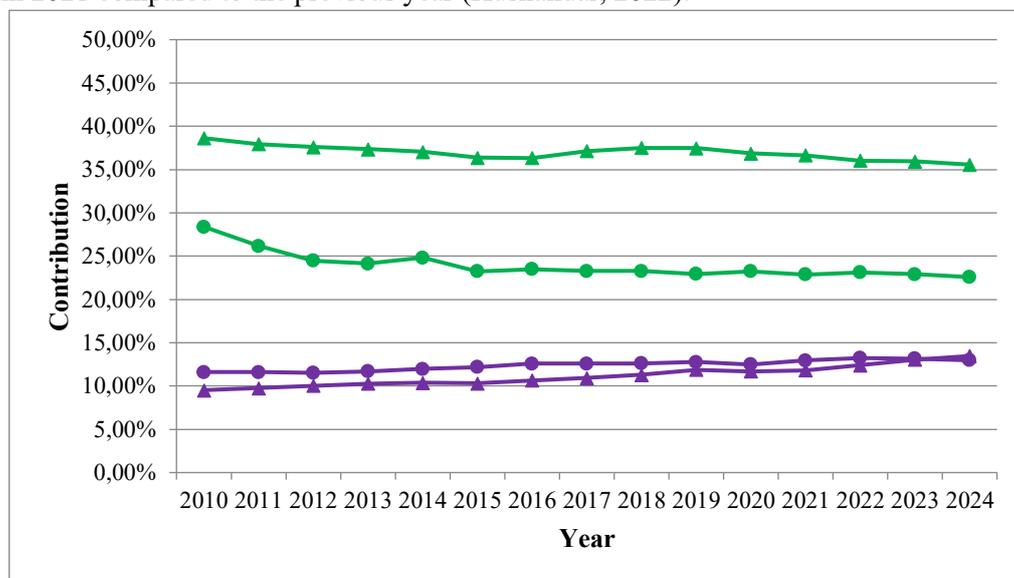
- = South Sulawesi
- △ = North Sulawesi

- Green : Agriculture
- Red : Information and Communication

Along with capital accumulation and population growth, technological advancement is one of the components driving economic growth (Bangsawan, Nuryartono, & Pasaribu, 2023). Figure 4 shows that there are two provinces undergoing structural transformation in their economic sectors from agriculture to information and communication: South Sulawesi and North Sulawesi. This shift is closely associated with rapid digital infrastructure development and increased access to communication technologies, which have expanded service-based economic activities. This can be observed from the increase in the number of villages in South Sulawesi receiving strong cellular phone signals from 2011 to 2021. In 2011, there were 1,934 villages in both rural and urban areas, which increased to 2,393 in 2022. This indicates an addition of 458 villages, or an increase of 23.68%. The increase in the number of villages receiving strong cellular phone signals in South Sulawesi indicates development in the Information and Communication sector (BPS Sulawesi Selatan, 2022).

The development of information technology has become a major driver of transformation in various aspects of life in this modern era. Unstoppable advancement of the internet to the revolutionary presence of artificial intelligence, innovations in information technology have changed the way we communicate, work, and live our daily lives. The information and communication sector, also known as the ICT sector, is one of the key drivers of globalization and global economic growth, including in Indonesia. The growth of satellite technology, mobile-based technology, and the internet has facilitated communication and served as a means of information transfer for individuals and groups worldwide.

Indonesia, being an archipelagic country, is also a factor in the growth of information technology (Prihawantoro, Tukiyyat, & Nuraini, 2019). The vast distances between islands support the need for the information and communication sector. The rapid growth of the information and communication sector is supported by the fact that in 2022, 66.48% of Indonesia's population had internet access, with internet penetration in urban areas higher than in rural areas (BPS Indonesia, 2023). Research findings in Central Java Province indicate that the information and communication sector did not experience negative disruptions to the economy during the pandemic (Hastuti, 2022). This condition is also supported by data showing that Indonesia's information and communication sector grew by 6.81% to Rp696.46 trillion in 2021 compared to the previous year (Kusnandar, 2022).



Source : Research data

Figure 5. Transformation of the agricultural sector into a large trade and vehicle repair sector

Information
 ○ = Southeast Sulawesi
 Δ = Gorontalo

Green : Agriculture
 Purple : Trading

Figure 5 illustrates the transformation from the agricultural sector to the wholesale and retail trade sector and vehicle repair sector occurring in two provinces, namely Southeast Sulawesi and Gorontalo. The trade sector plays a crucial role in the economy by facilitating the exchange of goods and services and driving economic growth through increased capital flows and market development. According to export statistics reported by the Central Statistics Agency (BPS) of Southeast Sulawesi, Southeast Sulawesi, with all its potential natural resources, has significant opportunities for foreign trade. Quoting the Head of BPS Southeast Sulawesi, the export value of North Sulawesi in March 2022 reached 411.54 million US dollars, an increase of 31.00% compared to 314.15 million US dollars in February 2022. The highest increase in export commodities was iron and steel worth US\$96.83 million, which increased by 31.20%. The export value of the manufacturing sector dominated North Sulawesi's export value in March 2022, reaching 411.51 million US dollars, an increase of 99.9%. The largest export destination country was China, followed by the United States and South Korea (Biro Administrasi Perekonomian Sulawesi Tenggara, 2022). Based on the analysis from previous research, it also indicates that the trade sector in Southeast Sulawesi is a key sector that needs to be developed, as it has a forward and backward linkage index of more than one, suggesting that expanding this sector is expected to drive other sectors of the economy (Subanti & Hakim, 2009).

The current economic growth in Gorontalo Province is influenced by trade, specifically motor vehicle sales. Based on disclosures from the Head of the Central Statistics Agency of Gorontalo Province, the highest production growth achieved by Gorontalo Province comes from the wholesale and retail trade, repair of motor vehicles, and motorcycles category at 11.25 (BPS Gorontalo, 2023). This condition is supported by the results of several studies on the economic sectors in Gorontalo Province, which suggest that the trade sector remains a promising sector for development and is a supporter of the economy. The wholesale and retail trade sector, along with seven other sectors in Gorontalo, are considered prospective sectors, meaning they are expected to become the base sectors in the future (Endey, Arsana, Katili, Sahabi, & Talalu, 2022). The trade sector, along with agriculture, remains the largest supporting sector of the economy in Gorontalo Province (Olii, Sudirman, & Halid, 2023).

Structural Transformation Patterns of the Sulawesi Island Economy

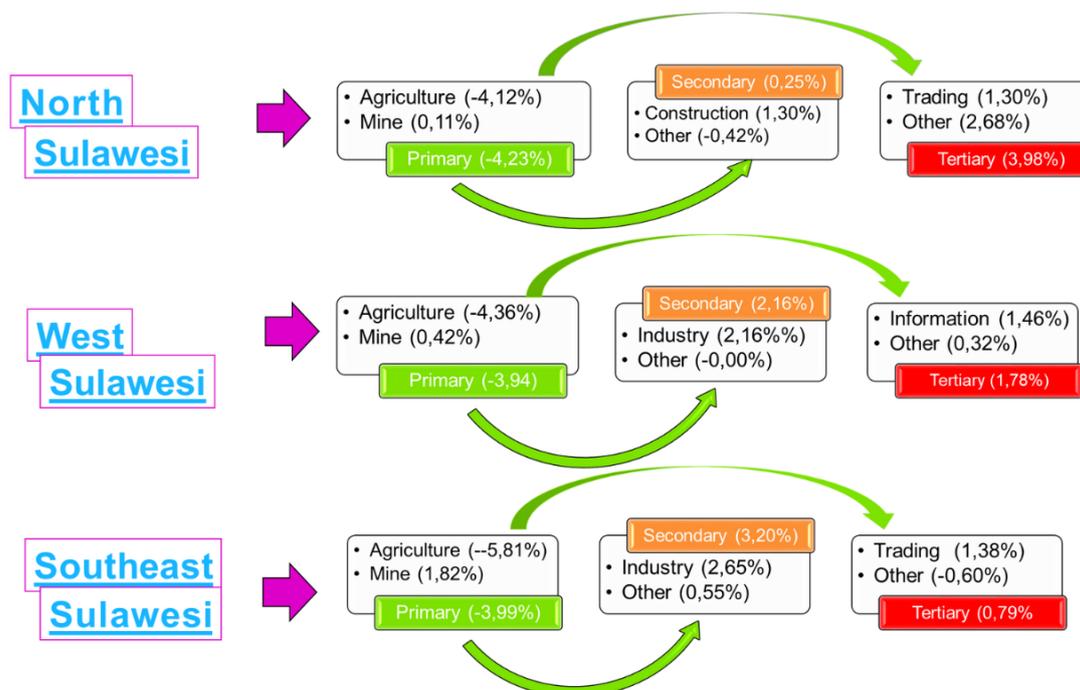
The economic sectors can be grouped into three categories: primary, secondary, and tertiary (Tambunan, 2001; Imbran, 2022). The details of the sector grouping are as follows (BPS Kabupaten Kudus, 2015).

Primary sector : Agriculture; Mining and Quarrying.

Secondary sector : Electricity, Gas, and Water; Industry; and Construction.

Tertiary sector : Trade; Transportation and Communication; Finance; & Services.

The arrangement of this transformation pattern classification is based on the direction of the distribution flow of the decline in the contribution of the primary sector from the largest. This classification arrangement adopts from the arrangement of the flow of goods in the marketing channel pattern applied to agricultural traders (Hasyim, 2012). In the research on the marketing channel pattern of agricultural traders, each commodity has a different number of marketing channel patterns, sometimes even if the commodity is the same, but the research conducted in different places will also have an impact on different marketing channel patterns (Rois, Hastut, Subantoro, & Subekti, 2022; Rusmiyati, Istikomah, & Sari, 2023; Delita, Prasmatiwi, & Yanfik, 2015). The distribution flow of the decline in the contribution of the agricultural sector in this research, or the transformation pattern in this research, can be classified into three transformation patterns, as shown in Figures 6, 7, and 8.

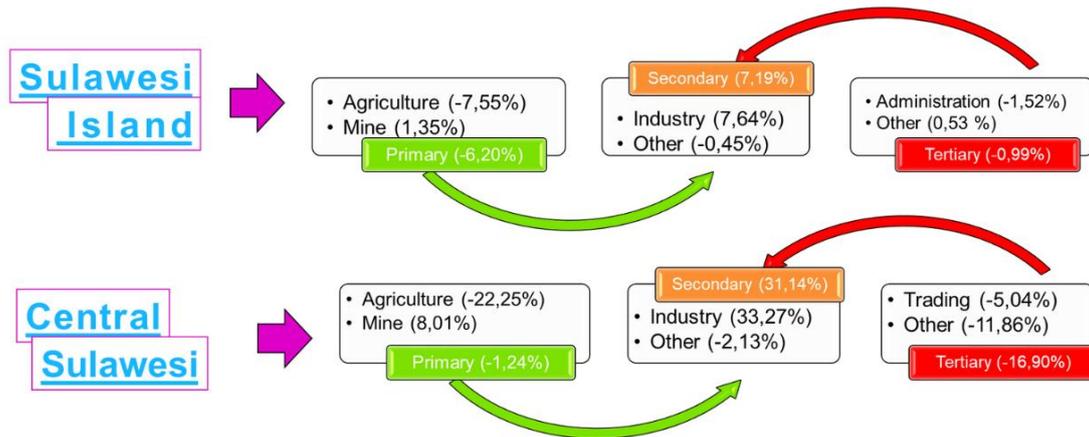


Source : Research data

Figure 6. Pattern I : Shift from the primary sector to the secondary and tertiary sectors

Figure 6, illustrates Transformation Pattern I, this pattern occurring in North Sulawesi, West Sulawesi, and Southeast Sulawesi provinces. Transformation Pattern I indicates that the distribution flow from the decline in the contribution of the primary sector is directed towards the increase in the contribution of the secondary and tertiary sectors. Economic transformation from the primary sector to the secondary and tertiary sectors is a common process in the development of a country's economy. This process reflects a change in the economic structure from one dominated by agriculture and natural resource extraction (the primary sector) to one dominated by manufacturing (the secondary sector) and services (the tertiary sector). The concept of economic structural change, according to Adisasmita, involves a transition and shift from activities in the primary sector to the secondary and tertiary sector (Adisasmita, 2013); Structural transformation is the process of changing the economic structure from agriculture (the primary sector) to industry (the secondary sector) or to services (the tertiary sector) (Guntara, 2017; Ardina, Laut, & Destiningsih, 2020)

This transformation pattern also occurs in other provinces, such as Aceh Province, where analysis results show that there has been an economic structural transformation in the observation years of 2008-2012, indicating a decline in the contribution of the primary sector with relatively low growth. This is accompanied by an increase in the contribution of the tertiary and secondary sectors with relatively high growth (Sufriadi, Hamzah, & Syahnur, 2015). Negara Indonesia also exhibits the same transformation pattern, as indicated by research conducted by (Ardina, Laut, & Destiningsih, 2020) showing a structural transformation from the primary sector to the secondary and tertiary sectors in the observation years of 2001-2018. Previous research on South Sulawesi's transformation pattern by (Amalia, Supatminingsi, Said, & Dinar, 2020) also yielded similar results, indicating a shift from the primary sector towards the secondary and tertiary sectors in the observation years of 2010-2018, albeit with a relatively small degree of shift.

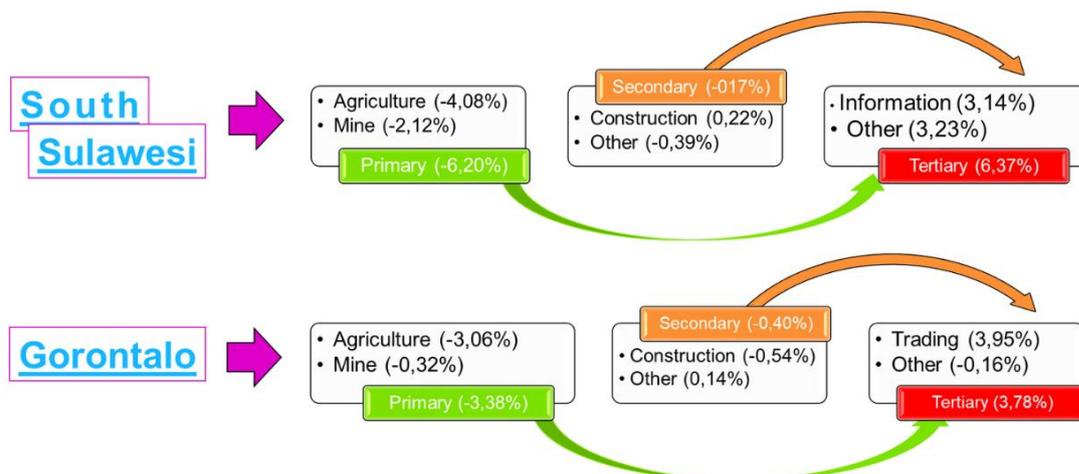


Source : Research data

Figure 7. Pattern II : Shift from the primary and tertiary sectors to the secondary sector

Transformation Pattern II is a transformation pattern that occurs in Sulawesi and also in Central Sulawesi. In this transformation pattern, both the primary and tertiary sectors experience a decline in contribution simultaneously, and this decline is distributed to the secondary sector, resulting in an increase in its contribution. Before a country fully transitions to the tertiary sector, strengthening the secondary sector is necessary. The secondary sector, which is typically manufacturing industry, provides a strong foundation for sustainable economic growth. The manufacturing industry often serves as the primary driver of innovation and productivity, as well as the main source of income and exports for many countries.

The secondary sector of the economy is quite important in economic transformation, considering the success of economic transformation in several developed countries, which proves the role of the more dominant industrial sector compared to others. The industrial sector plays a key role as the engine of its economic development (Sugiarto, 2019). The industrial sector will have greater downstream impacts, such as increasing capitalization value, the ability to absorb a larger workforce, and the ability to create added value from each processed input or raw material. Therefore, it is crucial to consider the industrial sector as the engine of economic development. The important role of the secondary sector is evident in its contribution to post-pandemic recovery, with government interventions and investment programs being key factors (Reyes & Rajagopal, 2022)



Source : Research data

Figure 8. Pattern III: Shift from the primary and secondary sectors to the tertiary sector

Figure 8 shows Transformation Pattern III of economic transformation on Sulawesi Island, which occurs in South Sulawesi and Gorontalo Provinces. Both the primary and tertiary sectors experience a decrease in contribution, and simultaneously, this decrease is redistributed into an increase in the contribution of the tertiary sector, indicating that South Sulawesi and Gorontalo Provinces Province has transitioned towards the tertiary sector. This transformation pattern is quite concerning if the primary and secondary sectors are not ready initially. If the primary and secondary economic sectors are not ready but have already shifted to the tertiary sector, it will result in negative impacts. Increased imports of goods are one of the negative impacts of this transformation pattern because if a country has shifted to the service sector but there are no distributed goods, the country will import to meet its demand for goods.

Pattern III of this economic transformation also occurs in several other regions in Indonesia according to previous research findings. Structural transformation from the primary sector to the tertiary sector occurs in the Madura region, based on the decrease in the contribution of the primary sector and the increase in the contribution of the tertiary sector, making the tertiary sector a priority for development in enhancing economic growth in the Madura region (Abadi, 2020). Based on research conducted from 2010 to 2019 regarding the impact of Indonesia's economic structural transformation on worker mobility between sectors, it shows that Indonesia's economic structural transformation based on GDP is followed by worker mobility from the same sector, namely from the primary sector to the tertiary sector (Tajuddin, Syarif, Natsir, & Nur, 2020).

The identification of three distinct structural transformation patterns across Sulawesi Island demonstrates that regional economic transformation is strongly influenced by local economic characteristics and policy directions. Unlike previous studies that primarily focus on changes in sectoral shares, this study provides additional insights by classifying transformation patterns based on the direction of sectoral shifts, thereby offering a more nuanced understanding of regional structural transformation dynamics.

CONCLUSION

This study aimed to examine whether structural economic transformation from the agricultural sector to other sectors has occurred on Sulawesi Island during the period 2010–2024. The findings confirm that structural transformation is taking place, as indicated by the declining contribution of the agricultural sector and the increasing contribution of manufacturing, information and communication, and trade sectors. However, the transformation process is not uniform across provinces.

Three distinct transformation patterns are identified: (1) a shift from the primary sector toward both secondary and tertiary sectors; (2) a concentration of transformation toward the secondary sector; and (3) a shift toward the tertiary sector. Sulawesi Island as a whole shows a tendency toward industrial strengthening, particularly driven by developments in Central Sulawesi. These results imply that regional development policies should be tailored to provincial economic characteristics, while ensuring balanced sectoral development to maintain economic resilience and reduce structural disparities across regions.

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