

Human Capital Development and Industrial Sector Performance in Pre And Post Covid-19 Era: The Australian Experience

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ABSTRACT: *The importance of the ravaging pandemic on human development and industrial sector performance cannot be overemphasized. This is because an improved and quality industrial output is a function of quality human resources. This study explicitly examined the effects of the ravaging pandemic on human development and industrial sector performance in Australia during pre and post COVID-19 era. Human development was measured with the Human Development Index (HDI), Inequality Adjusted HDI (IHDI), Multi-dimensional Poverty Index (MPI) and the Gender Development Index (GDI) while the Earnings before Interest, Tax, Depreciation and Amortization (EBITDA) and the Industry Value Added (IVA) were used to capture the trend in Australia's industrial sector performance during pre and post COVID-19 era. Data were sourced from Australian Bureau of Statistics (ABS), the United Nations Development (UNDP) Report and World Bank indicators. The study findings revealed, amongst others, that human quality was better off before the pandemic than after it and this was explicitly reflected in the country's industrial output, as a better performance was recorded before the pandemic than after it. Australia, like China, needs more aggressive net zero CO₂ emission policies including those relating human development to industrial output. Aggressive export diversification would help her economy recover faster from the adverse effects of the ravaging pandemic through effective and efficient utilization of her renewable energy sources.*

KEYWORDS: COVID-19, Human Development Index (HDI), Earnings before Interest, Tax, Depreciation and Amortisation (EBITDA), Industry Value Added (IVA)

INTRODUCTION

Human development is seen to be a strong pillar to every country that aspire economic growth and development, especially industrial sector growth. This is because the industrial sector cannot effectively and efficiently grow without quality and modern skills from human as input. Hence, both human development and industrial sector growth policies cannot be made in isolation (Nain, Ahmad and Kamaiah, 2017). However, the recent pandemic has been a bane to human development and consequently on industrial performance. During the pandemic period both industrial operations and human activities were on hold, as the world seeks solution to the scourge. The Australian government was not left out in the pursuit of a panacea. The pandemic threw all the countries of the world into recession as most countries were on complete lockdown for more than a year.

According to Matthew (2011) health and education are two inseparable components of human capital necessary to make humans more productive. Van (2007) viewed human capital as formal and informal education and good health, and these include other related and natural occurrences like the expenses incurred in children upbringing, health costs and skills acquisition. Human capital is seen as a wide idea of human capacities (inherent or learned) that can increase the income of humans (Ejemeyovwi, 2018).

In Australia and other Organisation for Economic Cooperation and Development (OECD) countries, human development is done through a conscious effort of reform on education and training systems. The Wittegenstein Centre for Demographic and Global Human Capital in 2019 compiled a new OECD measure on human capital which builds on two components: years of schooling (mean years of schooling) and rates of return to additional years of education which reflects recent estimates of wage premia compiled by the World Bank in 2019. It is believed that countries with more educated population should have higher productivity while countries with lesser educated population should have lower productivity.

The quality of workforce and industrial output quality have played a pivotal role in Australia's economic growth and development over the years. This is because the growth and development path of most developed countries of the world, including Australia, can be traceable to huge investment in their human capital and industry. Australia's HDI attempts to picture the level of human progress overtime which is centered on the freedom of people to live and the kind of lives they want to. To effectively achieve this, this study effectively capture relevant dimensions the HDI failed to capture such as the Inequality Adjusted HDI (IHDI) and the Multidimensional Poverty Index (MPI). These indices adequately capture the level of deprivation in education, income and health.

REVIEW OF RELATED LITERATURE

Empirical Literature

The study carried out by Ghali and El-Sakka (2004) employed the use of the Neo-classical one sector aggregate production technique and Vector Error Correction (VEC) model to analyse human capital and industrial energy consumption rate and found that a long-run movement of industrial output, human capital and industrial energy use exists in Canada and is related by two cointegrating vectors. Zahnd and Kimber (2009) adopted the Vector Error Correction (VEC) model to analyse the Human Development Index (HDI) and Industrial Output (IO) and found that fireplace activities in industries have negative effects on human health in Australia. The study of Oluwatobi (2011) employed the use of Panel OLS to analyse the HDI, GDP, government expenditure on health and education, Gross Fixed Capital Formation (GFCF) and labour force and their major findings revealed the existence of a direct relationship between human development, GDP and government expenditure on industrial development in Australia. Heshmati and Rashidghalam (2016) investigated the technical change and Total Factor Productivity (TFP) growth based on observable technology shifters using panel OLS for 190 countries, including Australia, to analyse labour productivity as proxy for HDI and manufacturing output and their findings revealed that capital intensity and wage significantly and positively affected labour productivity. Training and education are strongly associated with higher labour productivity. The study of Black and Chow (2022) investigated the development pattern of job mobility during the pandemic in Australia as compared to other developed countries of the world and discovered that a positive relationship exists between wages and job mobility during the period under study. The study carried out by Lim et al (2021) described the implications of the Australian labour market on economic growth during the COVID-19 and how both monetary and fiscal policies were used to cushion the effects on the economy. Their results revealed a slacked pre-pandemic and post-pandemic economy.

Australia's Human Development Overview

According to the UNDP Report of 2019, Australia's HDI value leapfrogged from 0.871 to a record high of 0.944, from 1990 to 2021, placing the country 8 out of about 189 countries. Other human development indicators like life expectancy at birth rose by 6.5 years and the average years of schooling also rose by 1 year, while the expected years of schooling rose by 4.6 years. The Report further revealed the country's Gross National Income (GNI) per capita rose by 58.6% during the period of this study. This increment in key human development indicators have been adequately reflected in the high quality of human skills and knowledge which in turn have played a pivotal role in strengthening the country's manufacturing sector as quality input. To further capture the level and quality of Australia's human development, the IHDI value for 2019 is 0.867, recording a meager loss of just 8.2% when the HDI was discounted for inequality (UNDP Report, 2019). The Report further revealed the country's Human Inequality Coefficient as 7.9% and inequality in income, education and life expectancy at birth as 17.3%, 2.7% and 3.7% respectively. The country's Gender Development Index (GDI) which reflects the level of gender-inequality in

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empowerment, economic activities and health, stood at 0.097 as at 2019. This figure reflects the human development loss that arises from the inequality that exists between male and female achievements in various economic activities, empowerment and and health. To this effect, the UNDP Report ranked Australia 25th out of 162 other countries. Parliamentary seat occupied by women was also used as an indicator of gender inequality. The Parliamentary seats held by women stood at 36.7% and about 90% of adult female have acquired secondary education while that of the male stood at about 91%. Health facilities have been second to none, during the period of this study because for every 100,000 women child birth, about 6 women die from pregnancy related issues. The adolescent birth rate stood at about 11.6 births for every 1,000 female within the age bracket of 15 and 19. About 60.2% of women are actively involved in the labour market while about 71% of men are actively involved. These figures clearly explain a very narrow gap or difference in the gender inequality level.

Australia's Industrial Sector Performance before and after COVID-19

The pre and post COVID-19 era recorded a massive turnaround of the Australia's industrial sector. The World Bank Report of 2021 clearly show that the country's Mining, Professional, Scientific and Technical service, Retail trade, Agriculture, Forestry and Fishing, Construction and transport industries, all recorded a significant growth in output, adequately captured by an increase in their Earnings before Interest, Tax, Depreciation and Amortisation (EBITDA) and Industry Value Added (IVA). For instance, the EBITDA of the Mining industry grew by 14.6% from 2019 to 2020 and by 4.1% from 2020 to 2021, a weak growth hampered by the adverse effect of COVID-19. The IVA grew by 12.1% from 2019 to 2020 and just a meager 3.8% from 2020 to 2021, due to the effect of the pandemic. The EBITDA of the Professional, Scientific and Technical services industry grew by 19.2% and 5.6% in 2021 and 2020, respectively. The IVA of this subsector also grew by 6% and 1.6% in 2021 and 2020, respectively. The EBITDA of the Agriculture, Forestry and Fishing industry grew significantly by 36.4% in 2021, after the pandemic, from 10.9% decline in 2020 and a negative growth of 13.8% from 2019 to 2020 (World Bank, 2019).

Table 1: Australian Industry Employment and IVA Data and Movements, 2019-20 to 2020-21

| ANZSIC Division | Employment at end of June | | | Industry value added (current prices) | | |
|--|---------------------------|--------------|-------------|---------------------------------------|----------------|-------------|
| | 2020 '000 | 2022 '000 | Change % | 2019-20 \$m | 2020-22 \$m | Change % |
| Agriculture, fishing and forestry | 443 | 439 | -0.9 | 26,725 | 31,446 | 17.7 |
| Mining | 187 | 189 | 1.1 | 208,231 | 216,116 | 3.8 |
| Manufacturing | 830 | 839 | 1.1 | 106,995 | 107,381 | 0.4 |
| Electricity, water, waste services and gas. | 118 | 123 | 4.2 | 49,724 | 49,142 | -1.2 |
| Construction | 1104 | 1196 | 8.3 | 127,518 | 130,795 | 2.6 |
| Wholesale trade | 547 | 569 | 4 | 72,447 | 71,731 | -1 |
| Retail trade | 1337 | 1388 | 3.8 | 82,916 | 89,856 | 8.4 |
| Food services and Accommodation | 957 | 1055 | 10.2 | 39,396 | 40,287 | 2.3 |
| Warehousing, postal and Transport | 634 | 639 | 0.8 | 74,998 | 71,682 | -4.4 |
| Telecom and Information media | 159 | 167 | 5 | 37,716 | 36,948 | -2 |
| Real estate services, rental and hiring. | 402 | 413 | 2.8 | 85,121 | 86,491 | 1.6 |
| Technical services, scientific and Professional. | 1130 | 1200 | 6.1 | 136,843 | 145,108 | 6 |
| Support and Administrative | 885 | 930 | 5.1 | 69,482 | 67,139 | -3.4 |
| Public administration and safety (private) | 87 | 90 | 3.5 | 6,615 | 6,906 | 4.4 |
| Education and training (private) | 422 | 451 | 6.9 | 32,053 | 33,096 | 3.3 |
| Health care and social assistance (private) | 1370 | 1446 | 5.6 | 102,419 | 110,201 | 7.6 |
| Arts and recreation services | 200 | 217 | 8.5 | 12,834 | 11,958 | -6.8 |
| Other services | 492 | 534 | 8.5 | 32,227 | 32,555 | 1 |

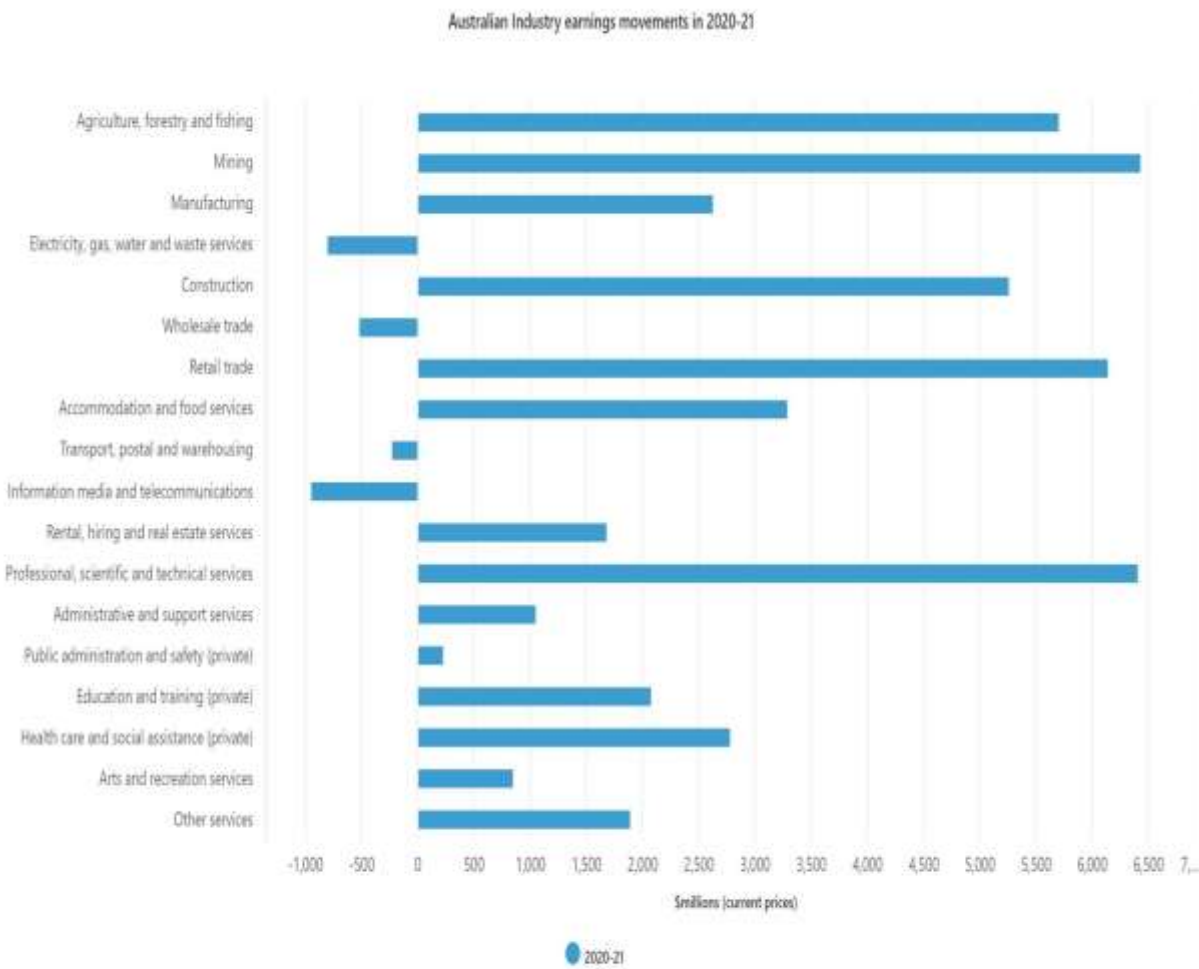
Source: Australian Bureau of Statistics, Australian Industry 2020-22 financial year

However, the sub-sector IVA grew by 17.7%, from a negative growth of 9.4% in 2020 and 8.8% in 2019, on average. The EBITDA of the Construction industry grew by 9.9% and 7.3% in 2022 and 2020, respectively. However, the IVA of this sub-sector grew by 2.6% from 2020 to 2022

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while the EBITDA of the Transport industry recorded a negative growth of 0.7% and IVA declined by 4.4% during the same period (World Bank, 2021). The weak and negative growth of the EBITDA and IVA of the Australian industrial sector from 2019 to 2020 can be traceable to the adverse effects of COVID-19 pandemic on human development and ultimately on the sector. The graph below buttresses the above analysis.

Figure 1: Australian Industry Movements from 2020 to 2021.



Note: refers to Earnings before interest, tax, depreciation and amortisation (EBITDA).

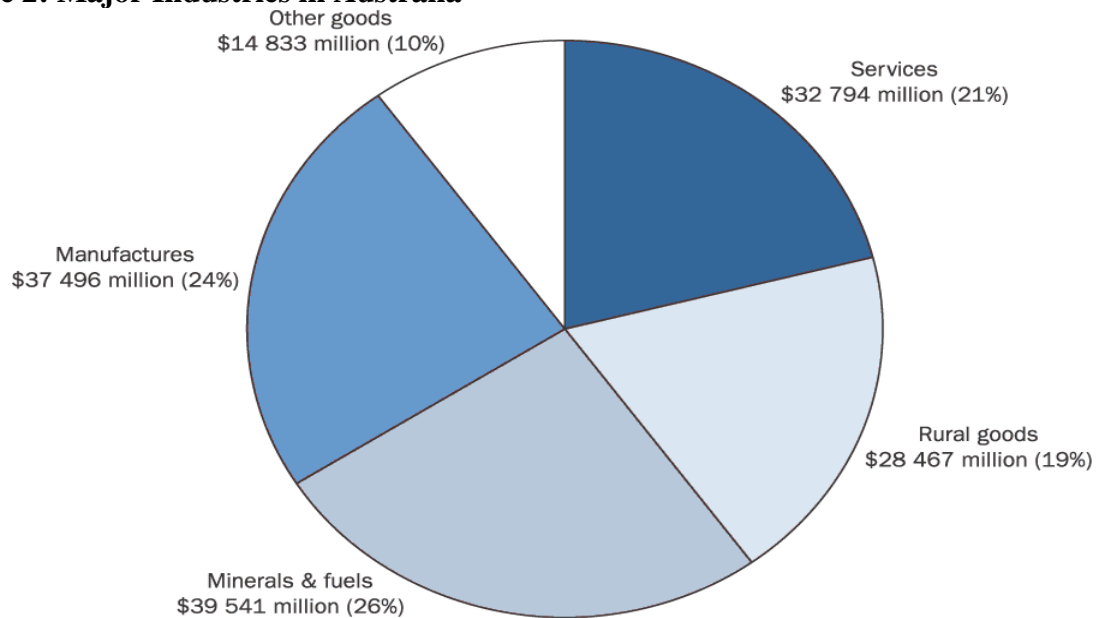
Source: Australian Bureau of Statistics, Australian Industry 2020-21 financial year

The Australian Economy and Structure of its Industrial Sector

Australia is one of the advanced countries in the world that practices a mixed economy system with an estimated GDP of about AUS1.89 trillion in 2019 making it the only economy with the highest median wealth per man in 2018. As at 2020, during the COVID-19 era, the country was ranked as the 20th largest importer of goods and 25th largest exporter of goods in the world. The country’s nominal GDP was ranked as the 13th largest, 18th largest by Purchasing Power Parity (PPP) adjusted gross domestic product in the world (World Bank, 2021).

As at 2019, one of significant industries in Australia is the primary manufacturing industry constituting textile, footwear and clothing industry and passenger motor vehicle industry and this account for about 48% of total exports, while research and development accounts for about 45% (World Bank, 2019). The beverages and food manufacturing industry is the largest industry in Australia which consist of Seafood processing, Dairy products, Oil and fat manufacturing, Beverage and malt manufacturing, Bakery products, Meat and its products, Sugar and confectionery manufacturing, Cereal food and flour mill manufacturing and Fruit and vegetable processing.

Figure 2: Major Industries in Australia



Source: World Bank and OECD

Australia is richly blessed with viable minerals resources like iron ore, nickel, copper, gold, uranium, silver, diamond, opal, coal, oil shale, petroleum, natural gas and rare earth. Most of these minerals are exported to other countries like China for processing, of which minerals and energy

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constitutes about two-third of Australia's exports to China while about half of iron ore are exported to China. These mineral resources have been a strong pillar to Australia's economic growth and development.

Coal is mined in every of the Australian states of which about 85% are used for generating electricity. About 75% of coal is exported to eastern Asia, making the country the world's leading exporter of coal. The origin of uranium mining in Australia can be dated back to the 20th century in the southern part of the country. The country is endowed with about 23% of the uranium reserves in the world (CSIRO Report, 2019). Beverly Uranium Mine, Ranger Uranium Mine and Olympic Dam are the three biggest uranium mines in Australia as at 2019. The 2019 CSIRO Report further revealed about 140 trillion cubic feet of natural gas reserve that is enough to sufficiently meet the needs of about one million people for about 2,800 years and a viable source of energy that can better the lives of humans and foster economic growth and development through improved industrial output. Some of the major multinational companies listed in the Australia Stock Exchange (ASX) include Chalco, Alcan, Rio Tinto, Xstrata, Alcoa and a Chinese company, Shenhua.

Basic Challenges Facing the Australian Industrial Sector

As at 2022, Australia is ranked 14th in the world, as the largest CO₂ emitter and the highest CO₂ emitter per capita, which is a serious challenge to human development in the country. About half of these emissions come from the industrial supply chains which are difficult to reduce (IEA, 2021). Sadly, while other developed countries are making huge investments on decarbonizing their environment, Australia is still struggling with how and when to start.

According to the Australian Industry Energy Transitions Initiative, Australia has set up strategies towards achieving a net zero CO₂ emission but the devastating effects on human health is something to be reckoned with (Matthew, Osabohien, Fagbeminiyi, Fasina, 2018). For instance, rather than coal, the production of green metals utilizes hydrogen as input and the use of renewable energy is becoming cheaper in generating electricity in Australia. According to the Net Zero Momentum Tracker Resources Sector Report *released December 2020*, the Pilbara region's Asian Renewable Energy Hub is capable of generating renewable energy for the production green hydrogen in large scale which can service both foreign and local markets.

The Energy Transitions Commission, Representatives Meeting, released May 2021 explicitly revealed that Australia has failed to follow the lead from China, her biggest trading partner, who has set long term goals towards achieving a net zero emission by 2060, through a carbon peaking plan that aims to target specific sectors like steel, amongst others.

CONCLUSION

Human development policies in Australia adopted before and after the pandemic have actually failed to achieve their full purpose especially in boosting the country's industrial sector performance. The human development indicators clearly show a healthy and improved healthy living before than after the pandemic in 2021. The EBITDA and IVA used to measure the Australia's industrial sector performance follow the same trend. The basic challenges bedeviling the industrial sector and human development are quite inimical to the country's economic growth, of which CO₂ emission is key. Furthermore, Australia has failed to learn from her major trading partners, like China, on formulating long-term, effective policies relating to the reduction of CO₂ emission for a healthier environment and human development. Even though the country is abundantly endowed with renewable energy resources like solar and wind, the country industrial sector is still dependent on fossil fuels consumption like coal. Australia is yet to take full advantage of the production of clean hydrogen of which she has competitive advantage over her major trading partner, like China. If effectively and efficiently harnessed, Australia will become a power house in the production of clean hydrogen that is free of CO₂ emission with all its hazards on human health.

Recommendations

Australia may follow China's lead independently, her major trading partner, to set a more realistic net zero CO₂ emission targets which will enhance the country's international trade position, negotiating power and compete favorably in a decarbonized world, to the benefit of human health. The Australian government should embark on a more human health-oriented long-term plan concerning a scheme on carbon trading not only on enhancing the power sector performance but also to enhance the performance of heavy industries like aluminum, cement, steel, petrochemicals and other related chemicals. This will ultimately better the lives of the citizens and transform Australia's industrial structure to a meet the changing trends in today's industrial regime. Furthermore, Australia must adopt more strategies towards diversifying her exports and improving the quality of her exports in the global market. For instance, Australia can take advantage of her cheap access to renewable energy that can be cheaply produced using green hydrogen, and export same in large quantities to other decarbonized nations like China. This will further improve the living standard of her citizens. The World Bank reports clearly prove that Australia possesses absolute advantage in the production of renewable energy from wind and solar, over her trading partners like China. An increased investment from these proceeds into other weak performing sectors is vital for an all-inclusive growth in the long run.

Australia also enjoys competitive advantage in the production of hydrogen. This is complemented with her vast resources in landmass and natural resources, 21st century infrastructural facilities and an advanced industrial sector with highly skilled manpower which when effective and efficiently

harness, would not only improve the country's gross domestic product but would also make the country a superpower in the production of clean hydrogen.

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