
RESEARCH ARTICLE

Service Exportation: The Effects in the Youth Labor Market and its Implications toward Economic Growth

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ABSTRACT

The dawn of the digital economy has approached the Philippines through the transformation of the service trade in the labor market. The study analyzed and observed a 30-year time series of the relationship between the country's service exports, productivity, and youth unemployment rate towards the end goal of economic growth. The young IT-BPO industry is now the country's most significant contributor to GDP, outpacing the manufacturing industry with more than 5% growth each year. Service exports play a big role in how the country is positioned in the future, and the study has seen a significant relationship between the GDP which proves to show that policy improvements, market openness, ICT infrastructure and capital expansion within these variables could help the country improve its unemployment rate and share on the global market.

KEYWORDS

Youth Labor Market, Economic Growth Rate, Gross Domestic Product, Service Exports, Unemployment Rate, Globalization, Trade liberalization

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1. Introduction

"International trade is one of the most progressive areas in economics in terms of academic and policy papers. It resulted from economic growth and development brought about by the structural transformation during the industrialization period. The rapid growth of the trade-labor nexus was especially imminent in the last two to three decades as international borders opened. People realized the employment opportunity of trade liberalization resulting in a significant increase in the services and manufacturing share in the economy's overall productivity. Industrialization's structural changes facilitated the tradability of services and the materialization of supply chains, creating opportunities for countries with a comparative population advantage; millions of young job-seeking individuals join the workforce every year. The significant increase in the labor market's interconnectedness internationally stimulated the globalization of work and the need for educational reforms to encourage skill development and specialization."

"The 2008 financial and economic crisis notably affected the labor market globally as unemployment and underemployment rate doubled; however, the impact on the Asian market was limited, as it was still in its infancy stage at the time. Before the 2008 crisis, Asian countries, namely Singapore, Taiwan, South Korea, and Hong Kong, experienced significant growth in their overall productivity due to their export-oriented strategies and rapid industrialization. Continuous developments in technology and the proliferation of free trade allowed more access to exchange goods and services between economies. This interconnected relationship called globalization produced great results for countries participating in trade liberalization as it stimulates the economy to grow, in line with its competitive advantages." The globalization of foreign market practices into a multilateral trade mechanism has been a significant pillar for developed countries' development in the last century. (Klasen, 2019)

"As the country grows its population, so do its opportunities. The vast majority of people in the Philippines are millennials that are suited for innovation and growth to prosper. It is a nation where the leading generation is at the right age to boost the economy

through productive labor capabilities. Technology is critical in this ongoing transition to skill-based job exportation, as the researchers examine the phase when the labor market is at the forefront of serving clients in more capital-rich nations."

"The question now is how exporting services would affect the labor market and the economy in general. The researchers understand that wages are significantly higher from a microeconomic point than the minimum wage for Metro Manila workers. According to a survey done by Glassdoor, the average monthly pay of a Customer Service Representative in a BPO company is Php 19,500. This amount is 41% more than the minimum wage in Manila. That in itself is a testament to the earning potential of exporting services to another country which could ripple down consumer spending. The requirements for these kinds of jobs are also relatively low, narrowing down to two: a high school diploma and fluency in English. Filipinos have been a critical player in the labor market mainly because of the neutral diction of speaking English and work ethics. The industry itself gave opportunities to earn a decent living and be productive in the economy."

However, despite the evident growth of GDP per capita annual growth rate in the 21st century, the International Labour Organization statistics stated that those aged 15-24 years old have consistently faced unemployment challenges, as illustrated by the high unemployment rate since 2005. On average, tertiary graduates experience unemployment for one year before landing a job. The vulnerable employment is a concern for the young and growing population, especially as the educational qualification intensifies in the labor sector. Hence, the young population opts to avoid agriculture and lean towards services. The Philippines possessing a complex labor force elaborates the difficulty of creating a youth employment plan since the domestic labor market is heavily integrated with the global labor market as there are more career opportunities and higher economic returns to education. (International Labour Organization, 2015)

Sluggish income growth combined with a significantly high youth unemployment rate misuse human capital and is a threat to social stability, as politicians may take advantage of the young unemployed population and create them into the foot soldiers of misguided revolutions. (Gyimah-Brempong, Baah-Boateng, & Oryema, 2018)

Two decades ago, the business process outsourcing (BPO) sector established a significant presence in the Philippines as new technologies enabled unprecedented connectivity. Today, the country controls 13% of the global business process outsourcing market. The sector contributes 6% to GDP and directly employs 1.2 million Filipinos. (Khatiwada, 2018)

2. Literature Review

Globalization increased pressure on firms and countries to comply with newly developed technologies and market conditions. It created additional opportunities to attain economic growth while maintaining international competition. Because of globalization, trade allowed countries to specialize in their areas of strength, boosting productivity, generating jobs, and stimulating growth; however, these incentives are not immediate. (Vandenberg, 2017)

Greater trade openness would provide prospects for increased profitable specialization, especially in developing countries. The services sector has been the standout amongst the most imperative primary industries accounting for two-thirds of the total value added globally and a higher ratio in high-income countries. Its economic importance continues to develop, both in terms of production and jobs. Flexible policies and regulations play a critical role in facilitating structural changes by ensuring that workers are aware of new job opportunities and have the chance to acquire the skills necessary to secure them; trade agreements and provisions can be designed in such a way that workers' welfare is protected from excessive trade openness. Proper execution of policies and regulations prevents countries from seeking a competitive advantage through low labor costs based on common labor standards. (Vandenberg, 2017)

Digitalization, e-banking, mobile banking, and online transactions reshape the finance and logistics industries' market models. Although banks and other financial services institutions retain affiliates in other countries to do business, they adapt to changing customer tastes by providing an increasing range of online services, ranging from credit card purchases to financial management. Insurance companies are allowing for electronic underwriting and filing a claim. This is just a sampling of the cross-border online resources that digitalization is expected to bring to the sector shortly. Hence, we can observe that all service industries are transforming as a result of technological advancements. This is because of the synergy between the telecommunications industry, which provides high-speed broadband such as 5G, the information technology sector, which develops ground-breaking industry-specific software, and robotics which benefits from a thriving research and development industry. (World Trade Organization, 2019)

The General Agreement on Trade in Services (GATS) assigns four supply modes to services trade. Mode 1 (cross-border supply) encompasses international transport and services via digital networks when the service provider is not physically present in the member country where the service is consumed: mode 2 (consumption outside the country) or tourism. Mode 3 (commercial presence) refers to providing a service by a member's service supplier by establishing a retail presence in another member's

territory. Mode 4 (movement of natural persons) refers to the provision of services by a member's natural person temporarily residing on the territory of another member. (OECD/WTO, 2017)

Since the 1990s, call centers providing support services to international clients have significantly expanded. In the case of developing countries, in 2016, the Philippines' and India's services sectors developed extensive business process outsourcing (BPO) industries and accounted for 31% and 33% of their total exports, respectively. Although, a portion of their population works abroad. Services contribute to communication in several ways, such as by supplying the necessary infrastructure to sustain goods distribution, promoting supply chains and serving as inputs in the manufacture and export of goods, allowing e-commerce and the online provision of services, and increasing export diversification through the cross-border electronic provision of services. (Vandenberg, 2017)

According to the 2019 World Trade Report, the least developed countries (LDCs) continue to face barriers to expanding service exports and integration into the global services economy. This is due to various factors, including infrastructure constraints, the educational and skills deficit, a shortage of financial capital, and the digital divide. Countries that want to export services must train workers for new forms of employment that are being outsourced by both developed and emerging countries. The most recent openings are primarily in fields that include programming knowledge, applications, and online processes. (World Trade Organization, 2019)

Since 2015, the services exchange from developing countries (DCs) has increased by more than 10%. DC services trade accounted for 25% of global service exports and 34.4 percent of global service imports in 2017. In 2015, developed economy service exports accounted for \$1,521 billion of overall foreign services exports. China, India, South Korea, Hong Kong, and Thailand are the five countries that account for more than half of all service exports from the developing world. In 2017, the least developed countries exported 0.3 percent of global service exports and imported 0.7 percent of global service imports. These are primarily African economies with underdeveloped service sectors. Globally, commercial presence in another country is the most popular supply mode for trading services, accounting for nearly 60% of all service trade in 2017. Between 2005 and 2017, the contribution of developed economies to service trade increased by more than 10%, but it is still highly concentrated in five economies where services are provided. Manufacturing Micro, Small, and Medium Enterprises (MSME) began exporting sooner than manufacturing MSMEs. Almost half of all international trade in goods and services is made up of value-added services. (World Trade Organization, 2019)

Most developing and least developed countries (DCs and LDCs) provide tourism-related services through foreign consumption. Foreigners on vacations or business visit these countries. Despite this, the structure of service exports from DCs varies greatly. Sector exports in South Asia are mostly cross-border services such as IT, BPO, and business and technical services. Service exports in East Asia are inextricably related to manufacturing exports. In Latin America, exports primarily focus on services provided to other countries in the region through direct investment. Trade patterns vary geographically with different policies and rates. The majority of India's exports are services to developing countries. The majority of Latin American exports are to countries in the same area. Middle Eastern and North African countries are known for exporting services to Europe. South African service providers, on the other hand, are increasingly targeting African nations. (World Trade Organization, 2019)

The global services exports were \$5,770 billion in 2018, while total services imports were \$5,485 billion. The World Trade Organization's (WTO) 2019 study focuses mainly on trade in services. It shows that, although developed economies dominate service trade, developing countries (DCs) now account for a large portion of service exports, and service exports from the latter are increasingly growing, albeit from a small base case of least developed countries. According to previous World Bank estimates, developing countries' growth rates were even higher, and their share of global services exports rose from 14 percent in 1985–89 to 18 percent in 1995–98. (World Trade Organization, 2019)

2.1 Performance of Philippine services exports

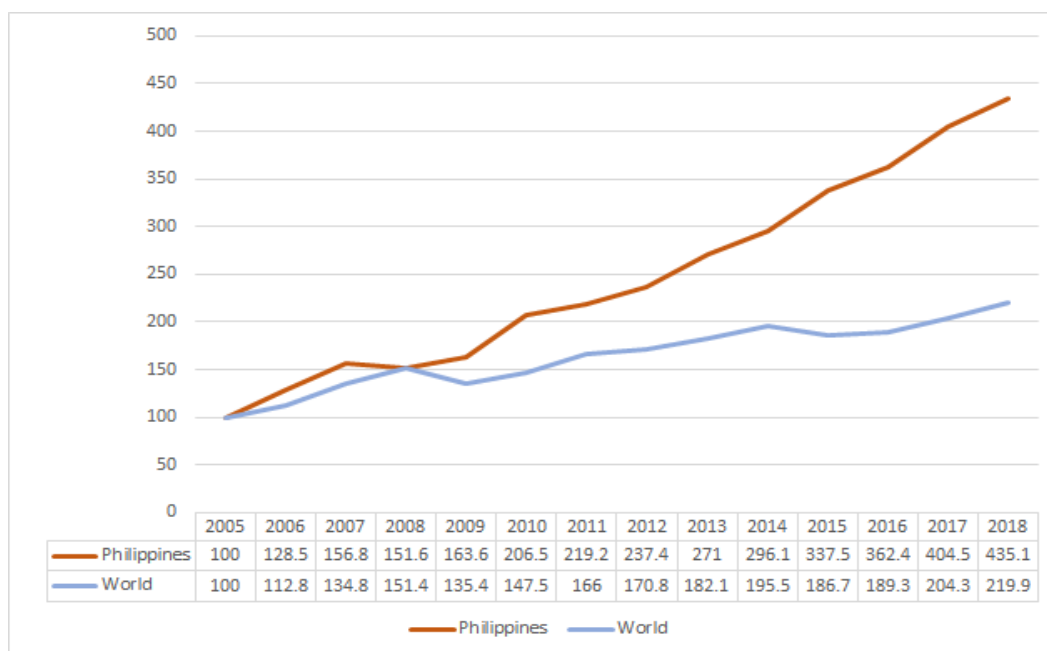


Figure 2.1 Service Exports Growth Rates. (source: UNCTADStat).

Adapted from “Performance of Philippine Services Trade” by (Seráfica, 2019). Copyright 2019 by the Philippine Institute of Development Studies.

The value of global services exports, based on figure 2.1, increased by 120 percent between 2005 and 2018. It increased from USD 2.68 trillion in 2005 to USD 6.03 trillion in 2018. Over the same period, Philippine services exports grew by 335 percent, outpacing the global average. The country’s services exports increased to USD 38.4 billion in 2018 from USD 8.6 billion in 2005. (Seráfica, 2019)

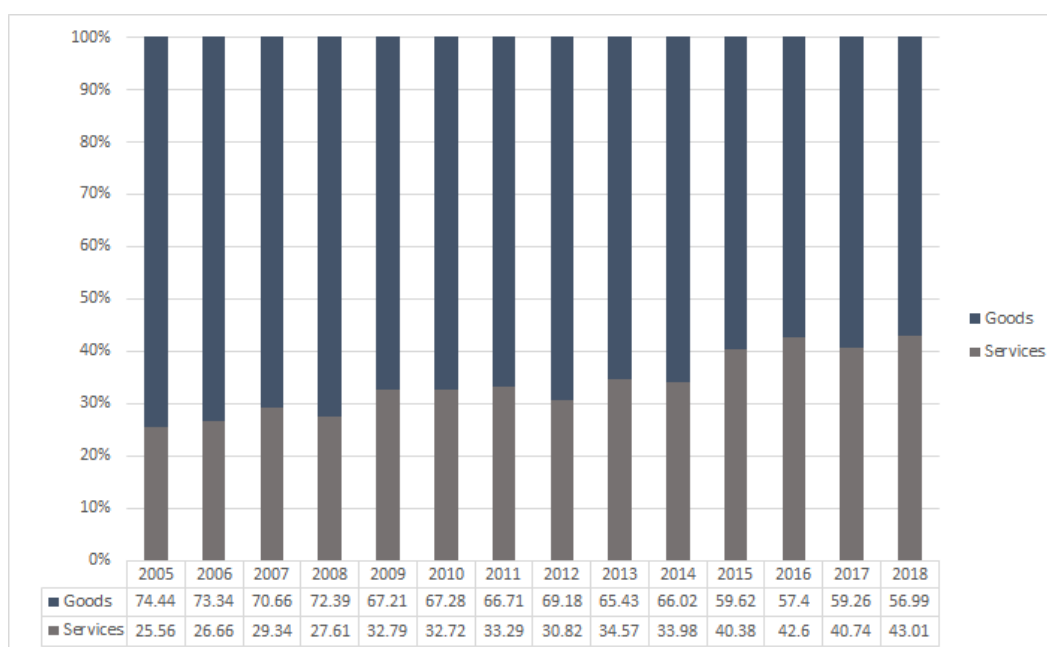


Figure 2.2 Distribution of Exports. (source: UNCTADStat).

Adapted from “Performance of Philippine Services Trade” by (Seráfica, 2019). Copyright 2019 by the Philippine Institute of Development Studies.

In 2005, service exports only accounted for 25.56% of the total exports of the Philippines. The annual average growth rate was about 33.6. Through a steady growth of the service sector, it now increased to approximately 43.01% in 2018, as shown in figure 2.2. (Serafica, 2019)

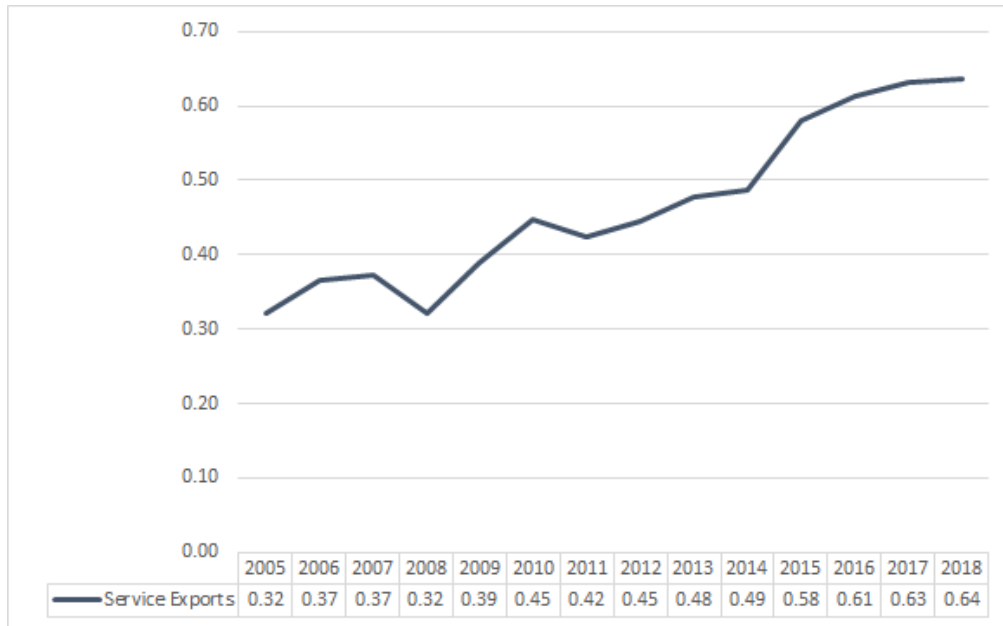


Figure 2.3 Share of the Philippines in Global Service Exports. (source: UNCTADStat)

Adapted from “Performance of Philippine Services Trade” by (Serafica, 2019). Copyright 2019 by the Philippine Institute of Development Studies.

The Philippines’ global share in figure 2.3 was 0.32% of the worldwide service exports sector in 2005, but it significantly increased in 2018 to 0.64, a 100% growth in 13 years. (Serafica, 2019)

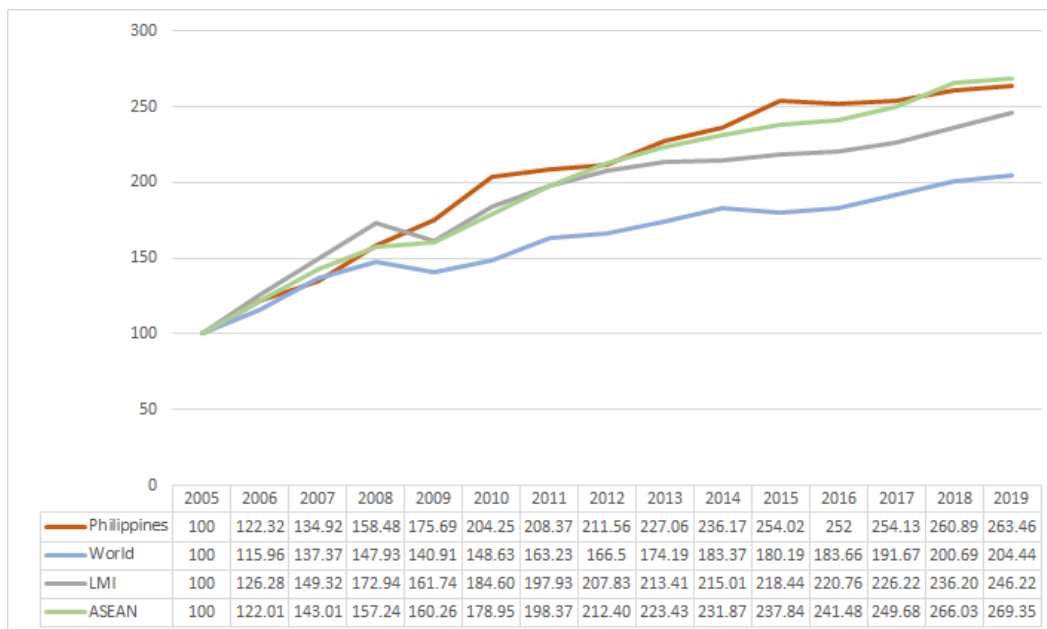


Figure 2.4 The growth rate of digitally-deliverable services. (source: UNCTADStat).

Adapted from “Performance of Philippine Services Trade” by (Serafica, 2019). Copyright 2019 by the Philippine Institute of Development Studies.

In terms of digitally-deliverable services growth in figure 2.4, the Philippines performs well more than the world economy and lower-middle-income counterparts. It is also performing closely well with the ASEAN economy. (Serafica, 2019)

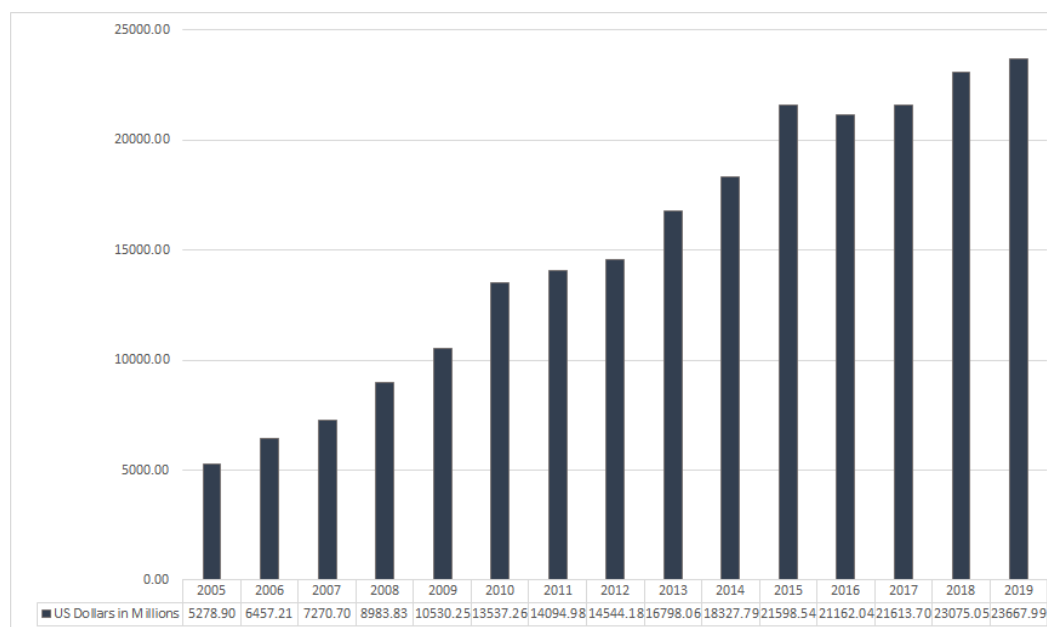


Figure 2.5 Digitally-deliverable services in USD at current prices in millions. (source: UNCTADStat).

Adapted from "Performance of Philippine Services Trade" by (Serafica, 2019). Copyright 2019 by the Philippine Institute of Development Studies.

As observed in figure 2.5, the average annual growth rate of the Philippines' digitally-deliverable service is about 11.66% contributing to the economy at about \$2.4 billion in the recent 2019 data provided. The significant growth rates were in 2006, 2008, and 2010 which each accumulated more than 20%. (Serafica, 2019)

In developing Asia, where rapid growth of manufacturing exports in recent years was evident in most analyses, the growth of services trade has been strikingly similar. In his study, Shepherd B. (2019) observed a complex set of outcomes that varies by economy and sector. He emphasized that even in manufacturing success stories such as Vietnam and China, there is evidence of quantifiable and, in some cases, comparable productivity gains in services. Despite the idea that rapid productivity growth can only exist in manufacturing, economies with service sub-sectors have exhibited significant growth rates in contrast to the manufacturing growth during the golden age of Factory Asia. (Shepherd, 2019)

Evidence from cross-country comparisons indicates that greater trade openness is associated with a lower unemployment rate. Governments can generate positive employment benefits from trade through various policy options, including; job search guidance, trade transition services that offer wage assistance, employment assistance to employees affected by offshoring. Notable increases in labor provisions in trade agreements are associated with increased labor force participation. (Vandenberg, 2017)

In a paper conducted by Thomas (2018), using the Balance-of-Payments-Constrained Growth (BPCG) model, he calculated the impact of services trade on India's current account balance and economic growth. His study concluded the critical role of the service industry in leading the Economy of India toward a higher equilibrium development trend for the proportion of payments, assisting in the achievement of current account balance and economic growth. Other reports suggested that India's growth policy was unrealistic owing to the assumption that call-center facilities were the sole driver of the country's services export-led growth strategy. India has made great strides since 1991, diversifying its export basket to include growing its value-added offerings and inclusion in global value chains. (Thomas, 2018)

In 2007-8, the impact of service exports, such as business services, construction, and transportation, presented the most robust backward linkages, as measured by the input-output approach. Industries in transportation, post, telecommunications, storage, and business services have experienced a significant rise in the proportion of foreign value-added in services exports. Additionally, it is recommended that domestic value-added research be increased to assist India in achieving a higher pace of economic growth achievable in terms of sustainability in the balance of payments. (Thomas, 2018)

The largest BPO service provider, India, has both educational and technical resources with the advantage of low wages. According to research, the Philippines outperforms India in terms of talent quality; a recent study found that 30% of Filipino graduates are employable, compared to just 10% in India. Three major factors have been credited with the Philippines' competitive advantage in the BPO sector: English is spoken with a neutral accent (uncommon in India); workers share cultural similarities with Americans (due to the country's colonial past), and Filipino workers have a pleasant temperament at work. (Lee, Vári-Kovács, Yu, & Lall, 2014). The global growth of the BPO industry is based on continued investment in skills and the modernization of telecommunications infrastructure. (Errighi, Khatiwada, & Bodwell, 2016)

A few studies have focused on the employment effects of exports generally and service exports in particular. Feenstra and Sasahara (2018), Feenstra, Ma and Xu (2017), Caliendo, Dvorkin, and Parro (2015) show that increased exports are positively related to employment generation in exporting countries. Sasahara (2018) finds a positive effect of exports on income growth and employment, although he argues that there are heterogeneous growth and employment effects across service sectors. He argues that the cross-country heterogeneity in the impact of exports on employment can be explained by differences in the sectoral composition of exports across countries. (Gyimah-Brempong, Baah-Boateng, & Oryema, 2018)

Service exports have statistically significant positive effects on income growth and youth employment, all things equal. Based on our results, the answer to Ghani and O'Connell's (2014) question as to whether service exports can be a growth escalator in low-income countries can be answered affirmatively for African countries. (Gyimah-Brempong, Baah-Boateng, & Oryema, 2018)

Recent trends in foreign trade indicate that trade in services is growing faster than that of goods. In the case of Jordan, an increase in services by 1% improves output by 0.28%. This upward trend reflects the importance of trade in services, in particular for developing countries. As a result, the services trade may represent an opportunity for the country to establish a comparative advantage and expand its market. Thus, the authors recommended that the government invest more in developing Jordan's service sector and develop policy recommendations. Trade agreements are critical components and should be structured to address the exporting sectors of Jordan genuinely. The study used an FM-OLS regression to examine the period 1980–2014, defining trade as the trade volume concerning GDP for both goods and services. (Sandri, Alshyab, & Ghazo, 2016)

In the immediate spillover effect of overall trade services on economic growth, services trade has a sizable influence on a country's economic development. However, since services are a type of human resource, the spillover impact of expanded trade in services on a country's economic growth is dictated not just by trade opening but also by the country's human capital stock. The study concluded that because cross-border service imports and exports have a spillover impact on economic production, cross-border service exports directly lead to economic growth. As service trade's overall volume as a percentage of GDP continues to increase, so does its effect on a country's economic development. (Muhammad, Zhu, Yu, Memon, & Ali, 2020)

In order to ensure productive markets and optimize development resources, policy, legislative, and structural structures are needed. Externalities and coordination issues should be addressed in frameworks. They are significant determinants of service performance to foster complementarities and interconnections between service sectors and the economy as a whole. Policymakers can lower trade and investment barriers to expand competitiveness and facilitate inflows of information, technologies, funding, and citizens, among other factors that can aid in the growth of service supply capability while maintaining required policy room for development. (Mashayekhi, 2017)

The essential aspect of services trade in economic growth and development is becoming increasingly apparent because of its contribution to export diversification, utilization of resources as inputs in manufacturing products, and as a source of foreign direct investment. Around half of the global trade now occurs via global value chains. Services and trade in services play a critical role in enabling global production networks to function; numerous services, such as research and development, professional and financial services, advertising, and telecommunications, act as facilitators of global value chains. However, the increasing availability of data on services and trade exchange flows has facilitated studies into the openness of services trade policies, which have been shown to impede communication in various ways. Trade barriers in services, combined with insufficient regulatory frameworks that restrict competition and investment, are significant impediments to communication. This means that trade assistance will have a role to play in assisting developing country governments in improving connectivity. Additionally, adequate policies and regulations may also help foster the growth of service suppliers, reduce the expense and efficiency of services for all customers, and promote investment. (OECD/WTO, 2017)

Studies have shown that lower barriers to trade in services have benefits depending on the country-level economic governance variables. In developing countries, they may experience significant gains from the liberalization of services trade through improved policies and regulations, especially if the country has a weak institution. The authors stated that identifying and addressing regulatory gaps and places where foreign regulatory collaboration is needed to promote cross-border trade and investment may result in significant payoffs. (Hoekman, 2017)

Reduced trade barriers in services may affect a country's per capita income growth. Based on the analysis, the critical result is that service trade liberalization consistently has a statistically significant and positive impact. In low-income countries, the marginal benefit is more potent than in high-income countries. Eliminating barriers to services trade may not have a uniform effect across all modes of supply. Thus, a more detailed analysis of services trade liberalizing is necessary. (Briggs & Sheehan, 2019)

Additionally, the impact of liberalization of the services sector may vary by the service industry. As a result, industry-specific analyses may shed light on which service trade barriers are the most impeding growth via liberalization. (Briggs & Sheehan, 2019)

Globalization increased the interconnectedness of labor markets. However, the often asserted expanded scope for foreign exchange and cooperation has ramifications for employment-related policies. Thus, local authorities and governments stress the increasing need to adapt human capital strategies to compete in the market. Implicit in claims that human resource practices and institutions must be adjusted in order for industries to withstand increasing foreign rivalry. Additionally, the interconnected labor market remains insufficiently conceptualized and empirically accepted at the moment. (Chen, Felipe, Kam, & Mehta, 2018)

Using data from the IMF's Balance of Payments Statistics (BOPS), an article was created for a new dataset on trade in services that spans 192 countries from 1970 to 2014. According to the evidence presented in this study, commerce is quickly shifting away from manufacturing and toward services. The relationship between services and GDP growth is demonstrated to be steeper than the relationship between manufacturing and agriculture. (Loungani, Mishra, Papageorgiou, & Wang, 2017). Today's structural shifts are ushering in a service revolution by putting services at the core of global trade. The evidence presented in this research implies that service exports might be a game-changer, allowing globalization to be revived and sustained. Service-led growth may become the new standard for countries seeking an alternate growth strategy when industrial resources are depleted, thanks to the expanding tradability of services. In that situation, the economics literature on international trade agreements based on tari agreements covering trade in products should be revised so that trade-in-services agreements may be seriously considered. (Staiger & O., 2016)

The researchers note that there is not enough literature on the effects of service exports on youth unemployment; hence this study aims to contribute to the lack thereof and assist future researchers with the same area of interest. It is critical that we address the increasing youth unemployment with the expanding size of the service industry in mind since job-generation is observed in this sector and may help the vulnerability of employment of the young and growing population.

3. Methodology

3.1 Research Design

The study intends to analyze the impact of service exports on the country's youth labor market and the relationship. Quantitative Correlational research, a type of nonexperimental research, is used to evaluate this relationship. Quantitative Correlational Research seeks to establish a connection and is not concerned with controlling variables. It only assesses the statistical association of the variables to develop a conclusion that may help suggest a better path for the country's strategic policies for youth employment and overall productivity level. This chapter discusses how the researchers gathered the study's data and the statistical software used to analyze it. The researchers will also state sources, references, and limitations of the data for credibility, reliability, and validation. Moreover, this chapter will emphasize how the data were collected, analyzed, and interpreted.

3.2 Data Gathering Procedure

The data acquired relative to the research was retrieved from the World Bank database. The data procured are Gross Domestic Product Per Capita Growth (annual %), Service exports, and Youth Unemployment Rate. GDP per capita growth (annual %) is defined as the annual growth rate determined using the constant-price GDP per capita in local currency units and the least-squares method (World Health Organization, 2022). Economists make use of the GDP per capita (annual %) to assess the health of an economy. Service exports are the services provided by the citizens of a country exported internationally. Lastly, the youth unemployment rate is the percentage of unproductive individuals from the population aged 15-24 years old. These data variables were collected through related literature to be used primarily to identify statistical and economic relationships. There are 30 observations in the study from 2001 to 2020 as base years and 2021 to 2030 as the forecasted years.

3.3 Statistical Treatment of Data

As previously stated, the study will employ a correlational descriptive method of quantitative research; consequently, data collection will entail computational, statistical, and mathematical tools (SIS International Research, n.d.). Total population sampling is a technique used to examine a population with the same set of characteristics. In this study, the researchers will analyze the Philippines' labor market by looking at its determinant, the youth unemployment rate, in the years specified.

To analyze the relationship between Service Exports, Youth Labor Market, and Economic Growth, the researchers employed Microsoft Excel and SPSS by IBM. As a result, in addition to linear and multiple regression analyses, the obtained data will be

subjected to linear and multiple correlation analyses, multicollinearity tests, and autocorrelation tests. The following criteria will be used to evaluate the study's analytical procedures:

Linear Forecasting. Linear forecasting was used to predict the value for the years 2021 to 2030 by applying linear regression. Based on the historical data provided, The linear forecasting function estimates a future value along a line of best fit. (Cheusheva, 2021)

Linear and Multiple Regression. The researchers will use Statistical Package for the Social Science (SPSS) to conduct regression analysis and determine the significance of the independent variables, X1 and X2, in relation to the dependent variable, Y. Regression analysis seeks to estimate the mathematical relationship $Y=f(x)$, with the dependent variable Y serving as the response variable or outcome and the independent variable X serving as a predictor, explanatory, or covariate (Angelini, 2019). The linear regression and multiple regression equations take the following forms (Gujarati, Basic Econometrics, 2003);

$$Y_i = \beta_0 + B_1X_1 + B_2X_2 + B_3X_3 + u_i$$

Where:

Y_i = Dependent Variable

β_0 = Slope, the value of the dependent variable when the independent variables are equal to zero

The partial regression coefficients β_1 , β_2 , and β_3 states the measure of change in the mean value of Y, per unit change in X_1 , X_2 , and X_3 , while holding the value of the other independent variables constant.

u_i = Error term

$$Y = a + bX$$

Where:

Y = Dependent Variable

a = Intercept

b = Slope

X = Independent Variable

Note. Adapted from *Basic Econometrics (4th ed)* by (Gujarati, Basic Econometrics, 2003). Copyright 2003 by The McGraw-Hill Companies, Inc.

Pearson R Correlation. Pearson's correlation coefficient is a statistical test statistic used to determine the statistical relationship or association between two continuous variables. The table below shows the interpretation of the size of the correlation coefficients (Ratnasari, Nazir, Toresano, Pawiro, & Soejoko, 2016):

| Correlation Coefficient | Direction and Strength of Correlation |
|-------------------------|---------------------------------------|
| -1 | Perfectly Negative |
| -0.8 | Strongly Negative |
| -0.5 | Moderately Negative |
| -0.2 | Weakly Negative |
| 0 | No association |
| 0.2 | Weakly Positive |
| 0.5 | Moderately Positive |
| 0.8 | Strongly Positive |
| 1 | Perfectly Positive |

Note. Adapted from "The correlation between effective renal plasma flow (ERPF) and glomerular filtration rate (GFR) with renal scintigraphy 99m Tc-DTPA study" by (Ratnasari, Nazir, Toresano, Pawiro, & Soejoko, 2016), Journal of Physics: Conference Series 694. Copyright 2016 by the Journal of Physics.

Durbin Watson statistic. Durbin Watson is used in determining autocorrelation in the residuals from a regression analysis. When representatives of a set of observations arranged in time or space are linked, this is known as autocorrelation. The X variables should be unrelated. If this happens, the coefficients and standard errors of the variables become unreliable, as the current period's error term is a function of the previous period's errors.

(Gujarati, Basic Econometrics, 2003)

If d stat is = 2, there exhibits no autocorrelation.

If d stat is < 2, there exhibits a strong positive autocorrelation.

If d stat is > 2, there exhibits a strong negative autocorrelation.

Variance Inflation Factor. Variance Inflation Factor (VIF) is an indicator if multicollinearity is present in the model. Multicollinearity is when there is a correlation amongst the independent variables in the model, which may cause a detrimental effect on the regression findings. As a rule of thumb, if the value of the VIF is greater than 10, that variable is considered to be exhibiting collinearity. (Gujarati, Basic Econometrics, 2003).

4. Results and Discussion

The stated problems of the research will be assessed in this chapter through the use of the statistical methods mentioned in the Data Analysis section. As mentioned, the observations used in the study are secondary data from the World Bank and a 10-year forecast. The presentation and interpretation of results will facilitate the path of the study, whether it will reject or accept the null hypotheses. Furthermore, this chapter will provide relevant answers and additional information for further discussions and identification of research gaps.

Figure 4.1 Time series forecasting of Youth Unemployment in the Philippines



Figure 4.1 illustrates the current situation and forecasted value of Youth Unemployment in the Philippines from 2001 to 2030. As mentioned in the earlier parts of the paper, the youth has consistently faced unemployment challenges since 2005, as shown in the graph; however, based on the forecasted data, youth unemployment will have a significant and consistent decrease from 2021.

Figure 4.2 Time series forecasting of Service Exports in the Philippines

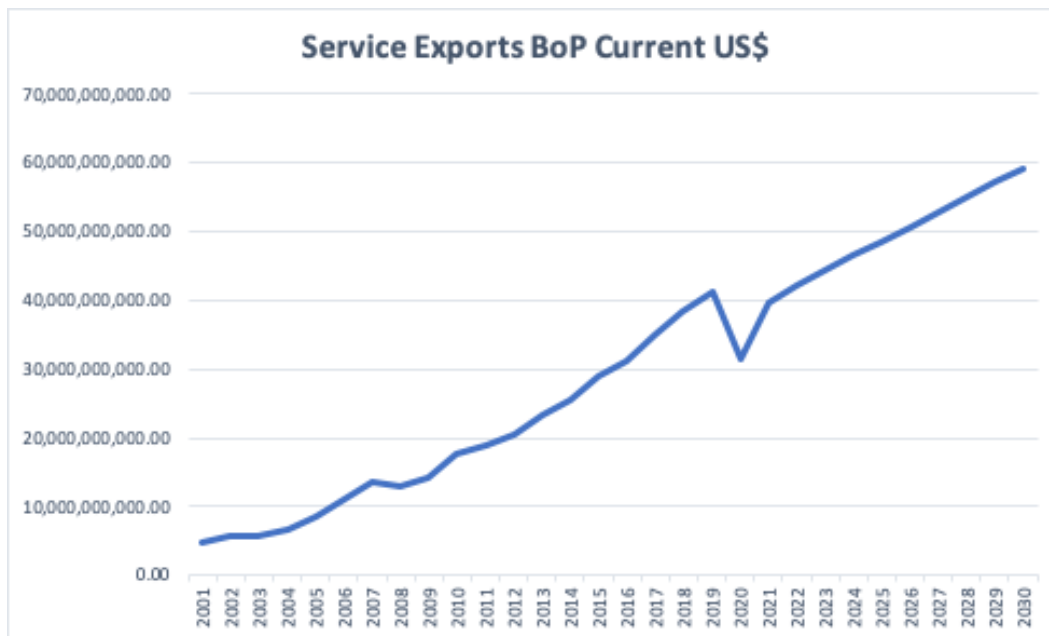


Figure 4.2 illustrates the current situation and forecasted value of Service Exports in the Philippines from 2001 to 2030. As observed on the graph, service exports experienced a dip in the year 2020 as a result of the COVID-19 pandemic. On the other hand, the forecasted data shows that there will be a steady increase in service exports for the next 10 years.

Figure 4.3 Time series forecasting of GDP per capita growth in the Philippines

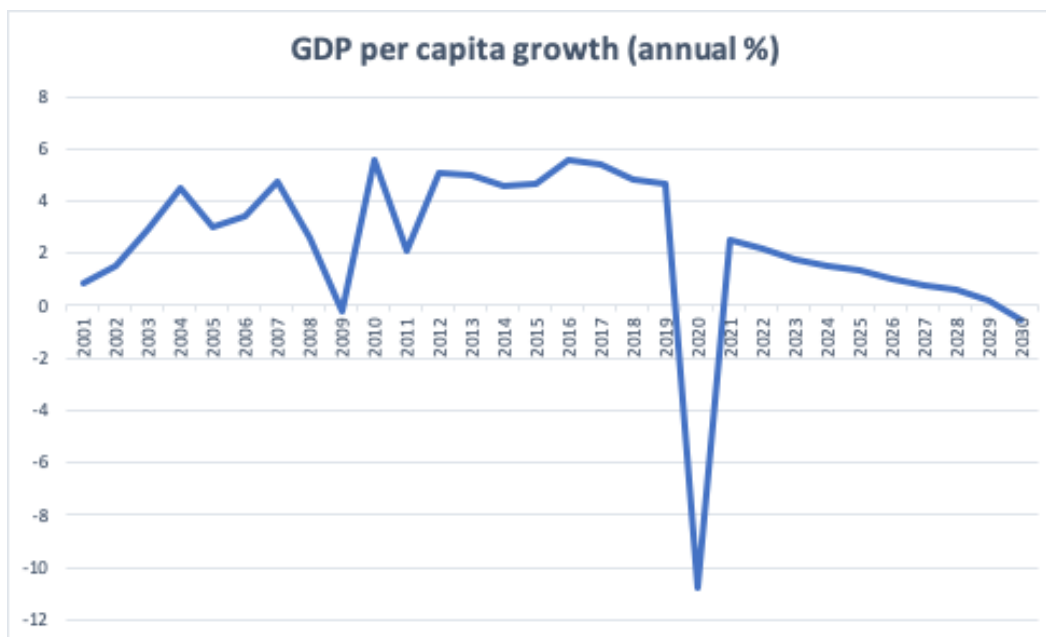


Figure 4.3 illustrates the current situation and forecasted value of GDP per capita growth (annual %) in the Philippines from 2001 to 2030. As seen in the graph above, GDP per capita growth experienced a significant decrease during 2009 because of the global financial crisis and another one in 2020 due to the pandemic. The economy is slowly recovering, and as presented on the graph, there will be growth in 2021 and will maintain its pace until 2030.

Table 4.4: Model Summary

| | |
|----------------------------|---------|
| R Square | .865 |
| Adjusted R Square | .855 |
| Std. Error of the Estimate | 0.63077 |
| Durbin-Watson | .648 |
| F Statistic | 86.385 |

a. Predictors: (Constant), Service Exports, GDP per capita growth (annual %)

b. Dependent variable: Service Exports BoP Current US\$

The R-squared value is 0.865, indicating that the independent variables X1 and X2 account for 86.5 percent of the variation in the (Y) dependent variable. In addition, the adjusted R Square value of 85% is the modified value for the number of independent variables in the model. Furthermore, the standard error indicates the average distance between the observed values and the regression line.

The Durbin-Watson value of 0.648 states that there exists a positive autocorrelation in the model. Autocorrelation may be present if the time series is nonstationary; the mean, variance, and covariance are time-variant. If both Y and X are nonstationary, the error u is also nonstationary. Hence, the error term will exhibit correlation. It is crucial to note that majority of economic time series exhibit positive autocorrelation since most of them move upward or downward over long time periods and do not reflect a steady up-and-down movement. (Gujarati & Porter, Chapter 12: Autocorrelation: What Happens If the Error Terms Are Correlated?, 2009)

In contrast, by examining the F statistic value, we can determine the model's overall significance. Because the value is 86.385, we reject the null hypothesis that no relationship exists between Services Trade, Unemployment Rate, and Gross Domestic Product and conclude a significant relationship between the variables.

Table 4.5: Coefficients between Youth Unemployment towards Service Exports and GDP per capita (annual %)

| | Coefficients Std. Error | Unstandardized B | VIF |
|-----------------|-------------------------|------------------|-------|
| Constant | 0.27 | 10.412 | |
| Service Exports | 0.00 | -8.463E-11 | 1.061 |
| GDP per capita | .008 | 0.065 | 1.061 |

The intercept's value is 10.412, which is the mean value of Y if all the independent variables are equal to 0. Following that, a unit increase in the Service exports (X1) results in a -0.00000000008463 decrease in Youth Unemployment, and a unit increase in GDP per capita (annual %) (X2) results in a 0.065 increase in Youth Unemployment.

The variance inflation factor illustrates the strength of multicollinearity in a multiple regression model. The analysis shows a low value of 1.061; therefore, we may conclude that multicollinearity is not present in the model. The non-existence of multicollinearity further proves the significance of the explanatory variables as it leads to lower standard errors.

Table 4.6: Correlation measures between Youth Unemployment towards Service Exports and Gross Domestic Product per capita (annual %)

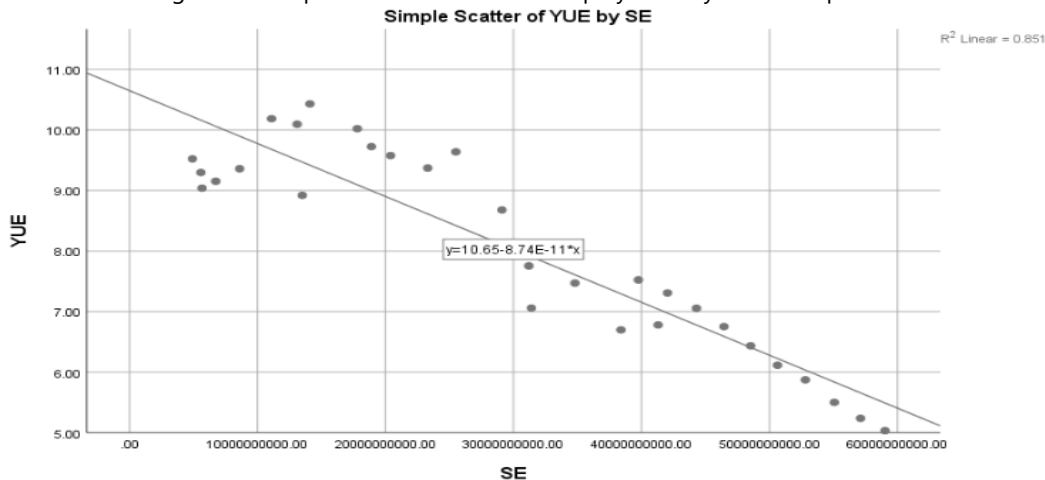
| | Pearson R | P-value | Decision on Null | Interpretation |
|---------------------------|-----------|---------|------------------|-----------------|
| Service Exports | -0.922 | 0.001 | Accept | Significant |
| GDP per capita (annual %) | 0.337 | 0.068 | Reject | Not Significant |

Decision Rule for assessing if the test is significant: (for $\alpha = .05$): If $p \leq .05$ (There is a significant relationship)

Testing at a significance level of 5%, the p-value of Service Exports is 0.001, therefore indicating that the null hypothesis should be rejected and is statistically significant as an indicator. On the contrary, with the p-value of 0.068, the variable GDP per capita suggests that the null hypothesis should be considered.

As shown in the Data Analysis section, the Pearson Correlation table illustrates the strength of the relationship between the explanatory and response variable. Youth Unemployment and Service Exports exhibited a strongly negative correlation with a value of -0.922. In contrast, the Youth Unemployment Rate and Service Exports with a value of 0.337 exhibited a moderate to strong positive correlation.

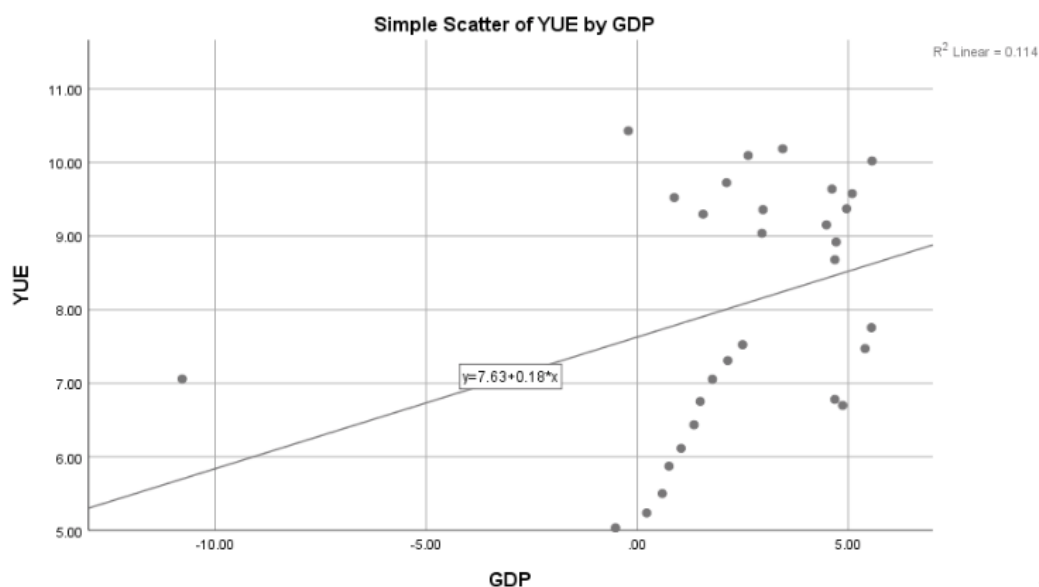
Figure 4.7 Simple Scatter of Youth Unemployment by Service Exports



The graph demonstrates the coefficient's indication of a strong positive significance with a value of 0.851. This value suggests that 85.1% of the variability in the dependent variable can be explained by the variation in the independent variable, the Service Exports.

Moreover, we can conclude that variable (X1), Service Exports, has sufficient evidence of an indication of a positive effect, suggesting that X1 and Y have a significant correlation with a p-value of 0.001 and an R-squared value of 0.851. The higher the R-squared value, the smaller the difference between the observed and fitted data.

Figure 4.8 Simple Scatter of Youth Unemployment by GDP per capita (annual %)



The graph demonstrates the coefficient's indication of a positive but rather weak significance with a value of 0.114. This value suggests that 11.4% of the variability in the dependent variable can be explained by the variation in the independent variable, the GDP per capita (annual %).

Moreover, we can conclude that variable (X2), GDP per capita, has sufficient evidence of an indication of an effect, however weak and relatively insignificant, suggesting that X1 and Y have no significant correlation with a p-value of 0.068 and an R-squared value of 0.114.

5. Conclusion

As assessed by the statistical methods used and literature provided, the researchers find that service exports have a statistically significant positive impact on youth unemployment; however, on the other hand, there is a weak to moderate effect on GDP per capita (annual %). Hence, policies encouraging service exports should be encouraged to reduce youth unemployment and strengthen the service exports industry to increase overall productivity. The question provided by Ghani and O'Connell (2014) if service exports can intensify growth in low-income countries was deemed affirmative for African countries and likewise for the Philippines. The continuous growth of the service sector signals the need for improvements in human capital programs and youth employment plans to alleviate the challenges that the youth labor market experiences with the intensification of educational requirements.

"The shift towards services emerged as the IT-BPO industry landed in the Philippines, providing Filipinos massive employment opportunities. However, despite the job creation opportunities proposed by trade liberalization and an open market economy, the unemployment rate remained a pressing challenge and relatively the same. This may stem from; a lack of awareness of firms, especially MSMEs, on the benefits of these trade agreements, insufficient human capital investments tailored to address the skills required by industries, i.e., Schools in the Philippines produce professionals and fewer middle-skilled workers. Currently, electronics remain the top exported product. Moreover, the private and public sectors should collaborate to diversify their exports."

5.1 Recommendations

"The intensive growth of technology and the internet age has caused a drastic difference in how the labor landscape is structured now. The government of the Philippines has fueled enough for the service sector to thrive and be the leading contributor to GDP and provide millions of jobs to the Filipino people, but that should not stop there. Certain policies can still be mitigated and amended to improve the workforce and its earning capacity."

"Currently, the Philippines is ranked 95 out of 190 economies in the ease of doing business. According to the World Bank, starting a business, registering property, and constructing a physical institution in the Philippines takes an average of 13 procedures. The corporation makes 13 annual tax payments after it is established, and when a contract is breached, the company involved needs to address a dispute with its customers or suppliers; hence it takes our courts an average of 962 days to resolve the issue. This has been partially resolved by the Republic Act 11032 or the Ease of Doing Business and Efficient Government Service Delivery Act of 2018, which aims to streamline the current systems and procedures of government services. Any considerable increase in the Philippines' ease of doing business necessitates a nationwide effort. Legislators, government agencies, and private businesses are making a positive difference in the business climate. Hopefully, these efforts will dramatically lower company entry barriers, resulting in increased economic efficiency for the average Filipino."

"The lack of awareness of business owners or Micro, Small, and Medium enterprises on the array of services exported and advantages of trade agreements should be addressed by promoting public-private partnerships to provide better access to information and facilitate training programs. Foreign clients are achieved through credibility and referrals. Therefore, business owners and individuals should be able to join international associations to gain potential clients with the government's aid or a non-governmental organization for requirements."

"The research recommends further improving this law by using flexible and well-adaptive tax reduction policies and utility subsidies to attract FDIs from developed countries. The development of ICT Service Providers would also play an important role in attracting clients worldwide. The country needs to double the pacing of internet infrastructure by easing the requirements needed to improve people's communication. More importantly, the backbone of the service sector's labor economy lies in the country's education system."

"There are not enough policies and information on the impact of trade agreements on jobs and working conditions; thus, inclusivity of the labor force should be promoted by encouraging participation of labor unions in such discussions. Improving the technology and quality of learning for public schools would provide the opportunity of the lower-income families to be able to apply for jobs in the service export sector, thus improving their quality of living."

"The focus on infrastructure and people's education can greatly affect the economy in the coming years as it competes with other developing nations. Adaptability will play a role as the country recovers from the pandemic and evolves into a new way of living. The country needs to reevaluate the skillset, values, and capabilities of the people to stay competitive in the global market. Suppose the government, its policies, infrastructure, and people worked together to attain more jobs in the service sector. In that case, the country could increase its market share and continue to deliver the results observed in the study."

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