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The Effect of Structural Change on Labor Productivity Growth and Employment in the Philippines

Mikhael Laurente

Abstract

Philippines is considered one of the fastest developing economies because of the growing service sector. This growth brought a significant change in the economic structure of the country which previously relied on the agricultural sector. This paper conducted a study about the significant impact of structural change on labor productivity growth and employment. The paper localized the decomposition analysis used in literatures to extract the share of "within" sector and "structural change" to total changes in labor productivity in the Philippines from 2004-2018, and Applied Pooled Least Square, to obtain the impact of structural change to labor productivity growth and employment. Based on Durbin-Watson test results, both Panel Regression Equation and Seemingly Unrelated Equation were utilized because there is no contemporaneous autocorrelation found in Pooled Least Square. Using Breusch-Pagan LM Test, Panel Regression is deemed more appropriate than Seemingly Unrelated Regression. Furthermore, the decomposition analysis showed that higher share of service sector in employment makes the contribution of "structural change" lesser to labor productivity growth due to labor market that becomes less flexible as service sector dominates the labor market because of higher skillsets needed by the sector. The regression analysis showed that structural change is a significant determinant of employment and labor productivity; structural change has a positive relationship to labor productivity due to the transfer of labor to high-productivity sector; and structural change has a negative relationship to employment because the employment brought by the structural change cannot be absorbed by the labor force because of skills mismatch.

Keywords: *Structural Change, Labor Productivity Growth, Employment, Seemingly Unrelated Regression Equation Model, Panel Regression*

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1. Introduction

The Philippines, as a newly industrialized country today (Boddin, 2016), has experienced the different phases of the economic cycle. In the 1950s, the country was considered as the model of development in Southeast Asia next to Japan. It was likewise identified as one of Asia's industrial powerhouses that manufactured consumer goods, fabricated raw materials, and built manufacturing facilities for automobiles, televisions, and other home appliances. However, by the 1970s to 1980s, the country transformed into one of the worst economies in East Asia and was even considered the "Sick Man of Asia" because of its poor economic condition, where it only registered an average of 3.4% growth rate, while its neighboring countries like Indonesia, Malaysia, Singapore, and Thailand registered a mean growth of 5.4% (de Dios, 1984). Today, the Philippines is known as one of the fastest growing and developing economies, with an average annual growth rate of 6.4% between 2010-2018, due to the powerful consumer demand followed by the dynamic labor market and blooming remittances with business activities flourishing in the service industries, including the business process outsourcing, finance and insurance, and real estate industries (World Bank, 2019). These service industries are considered as the main movers of growth in the country. Their rise, from 32.1% of total employment in 1970s to 52.5% of total employment in 2010s, brought the significant change in the economic structure of the country that previously relied on the agricultural sector (Intal, 2017).

Economic development and structural transformation follow a delicate and complex process. There are many factors that may affect and contribute to the development and transformation of a country. These may involve large-scale change as new and leading sectors may emerge as drivers of technological advancement and employment creation, thus the composition of output and employment may also drastically change – for instance, resources are reallocated among agriculture, industry, and services.

In classical economics, structural transformation takes place when agricultural productivity growth releases labor and creates demand for manufacturing goods, which will eventually result to the diversification of employment and a decrease share of agriculture in the economy – a common scenario in most developing countries (Mowla, 2017). According to studies, there are five distinct patterns of structural transformation: (1) decreasing share of agriculture in Gross Domestic Product, (2) decreasing share of agriculture in employment, (3) urbanization, (4) growth in other sectors, and (5) the structure of the population transitions with the declining of population

growth rates (Kuznets, 1955; Chenery & Syrquin, 1989; Timmer, 2009; Agarwal at al., 2018). Since the Philippines is considered as a newly industrial country today and every industrialized country goes through the process of structural transformation, it is very essential to know the significant impact of structural change to total labor productivity and employment in the Philippines and its administrative division. Furthermore, this will provide new evidence through a more comprehensive investigation about these changes.

This study also tested the following null hypotheses:

H01: Structural change has no significant correlation with labor productivity and employment

H02: Structural change has no significant effect on labor productivity growth

H03: Structural change has no significant effect on employment

2. Literature review

2.1 Structural Change and Labor Productivity Growth: The Effect, Relationship, and Policy Implications

According to Briones and Felipe (2013), the overall shape of the economy is established based on the degree of agricultural development as well as the degree of homogenization of agriculture with other sectors and everybody else in the economy that play a vital role in narrowing the gap between the rich and the less fortunate essential in alleviating poverty (Bathla at al., 2019; Johnston & Mellor, 1961). Meanwhile, Guncavdi et al. (2013) used the input-output model and found that Turkey has not yet fully achieved the structural transformation from agricultural economy to industrial economy. However, despite the sectors' production losses, it has a little bit affected the changing determinant of the demand or supply in the agricultural sector. Therefore, it is realized that the agricultural sector is not highly dependent in terms of input supply or demand. Moreover, Stegman (2011) used the term “convergence” and found that productivity convergence is evident in some sectors, generally in the in-service sector, while it is not evident in other sectors and thus the productivity convergence appears to be driven by structural change. This is supported by the study of Inklaar and Timmer (2009) where they argue that in OECD countries, their sequence of convergence in every sector has changed since 1970; whereas productivity in market

services merged, but there is no merging in manufacturing. A more comprehensive analysis justified that the sequence of merging is highly industry specific. There is no superior merging trend in sectoral productivity growth across developed countries.

In Africa, Mcmillan et al. (2014) found that structural change contributed positively to Africa's overall productivity growth which indicates a limitless potential for development through structural change. Moreover, in another study of Mcmillan and Rodrik (2011), they were able to identify the three elements that help influence whether structural change contributes to the total productivity growth or not: first, economies with a revealed comparative advantage in raw materials are at a disadvantage; second, economies that can maintain a competing or underrated currencies tend to encounter greater growth-amplifying structural change; lastly, countries with more flexible labor markets tend to experience a much greater growth-amplifying structural change that is why for the economies with a comparatively large contribution of raw materials in exports, structural change has generally been growth reducing because they cannot utilize the surplus labor from agriculture.

In most of the Asian countries, Forster-Mcgregor and Versapen (2016) found, using the decomposition of income changes in three elements, the following: adjustments in labor productivity within sectors; employment movement in different sectors (structural change); and, adjustment in the strength of employment participation that changes in labor productivity which is mostly brought by the changes "within" instead of structural change. However, in lower income Asians countries, structural change has a significant share to total labor productivity growth. Like in the case of Indonesia, Badriah et al. (2017) found, using shift-share decomposition analysis and panel data regression, that structural changes have minimal effect on labor productivity growth. Thus, structural change should be aided by various components like appropriating government programs and policies that will increase the value of human capital and that will give a better framework through developing an appropriate budget allocation by the government. Meanwhile, Escobar and Muhlen (2019) who utilized the two-step decomposition approach, data show that structural change is growth-reducing instead of growth-enhancing during the period of 2005 to 2016 mainly due to the redistribution of (unskilled) labor within the administrative district which reduces the overall growth in Mexico.

In the Philippines, Usui (2011), using decomposition analysis, found that unlike other countries in the Association of Southeast Nation (ASEAN) region, growth caused by sectoral

reallocation of labor or structural change makes little share to countrywide or overall productivity growth. The minor growth in the overall productivity came from the reallocation of labor from agriculture to services, where productivity has been sluggish but still higher than agriculture.

2.2 Structural Change and Employment: The Effect, Relationship, and Policy Implications

Evidence was found in China where Felipe et al. (2014) reported that the flow of labor out of low-productivity agriculture is a necessary condition for the country's aspirations to develop and finally to become one of the highest-income economy. The analysis indicated that the employment share of agriculture in China would continue to decrease to about 24% by 2020. This is confirmed by Martins (2019) when he found out that labor redistribution has played a vital role in improving the economic condition since the early 2000s, even if they continue to become relatively less dominant than within-sector productivity developments implying that the rampant redistribution of labor from agriculture to the other sectors has been the main leader of structural change, therefore agricultural employment shares are highly correlated with Gross Domestic Product per capita (Wingeder, 2014).

In Vietnam, Ravago et al. (2017) found that the growth in employment is because of the machinery and equipment investment by the government and a major part of the changes is because of the technical deviation caused by these investments. Using regression analysis, this was confirmed by Abbot et al. (2017) that employment in Vietnam grows slower than its GDP over the past decade. Because of this, Vietnamese policymakers argue that the relentless structural transformation is generating fewer jobs than expected. Using the seven aggregated sector and overall economy of Vietnam, they found that some of the changes between the growth in GDP and employment can be accredited to machinery and equipment investment by the government, and the bulk of these changes is because of technical change, which is also the same case in OECD countries according to Afsar and Mecik (2014). Although structural transformations have a significant effect in the labor market and the economy in OECD, the growth in labor productivity has a negative influence over employment in OECD affecting the long-term unemployment in an increasing rate. Meanwhile, Ando and Nassar (2017) found that education can boost the successful

rate of structural change to generate jobs. They emphasized that higher educational attainment is important because skills are necessary for labor mobility.

According to Timmer (2009), no economy has been able to maintain a fast-paced evolution out of poverty without expanding its agricultural productivity except for Singapore and Hong Kong. It was also argued that these countries should emphasize capital investment in irrigation and other agricultural infrastructures and pursue technology based on research and development through thereby increasing the budget allocation for these areas since they play a vital role in encouraging private investment and capital accumulation and thus promoting growth and employment opportunities. This was supported by Bustos et al. (2013) that factor bias of technical change through extensive research and development results to a labor-saving approach and leads to industrial and employment growth. Similarly, Badiane and Makombe (2014) emphasized that a rapid agricultural productivity growth is necessary for a successful transformation, but it should avoid government intervention in favor of industrialization because, as they stated, in Africa around 1960s-1970s, the government neglected agriculture which resulted to bad economic development and a growth-reducing structural transformation. This is distinguished by the increasing share of labor in the low productivity informal service sector. Thus, informal service sector must be regulated through adequate industrialization strategies and with the collaboration among government, industries, and the multi-stakeholder for better allocation of scarce labor resources (Senbet & Simbanegavi, 2017). However, Felipe (2019) argues that rapid structural change usually leads to greater unemployment, which requires prescriptions to focus on fostering full employment and to achieve inclusive growth. The government must commit all of its efforts and resources to pursue full employment to increase income and taxes, and reduce poverty.

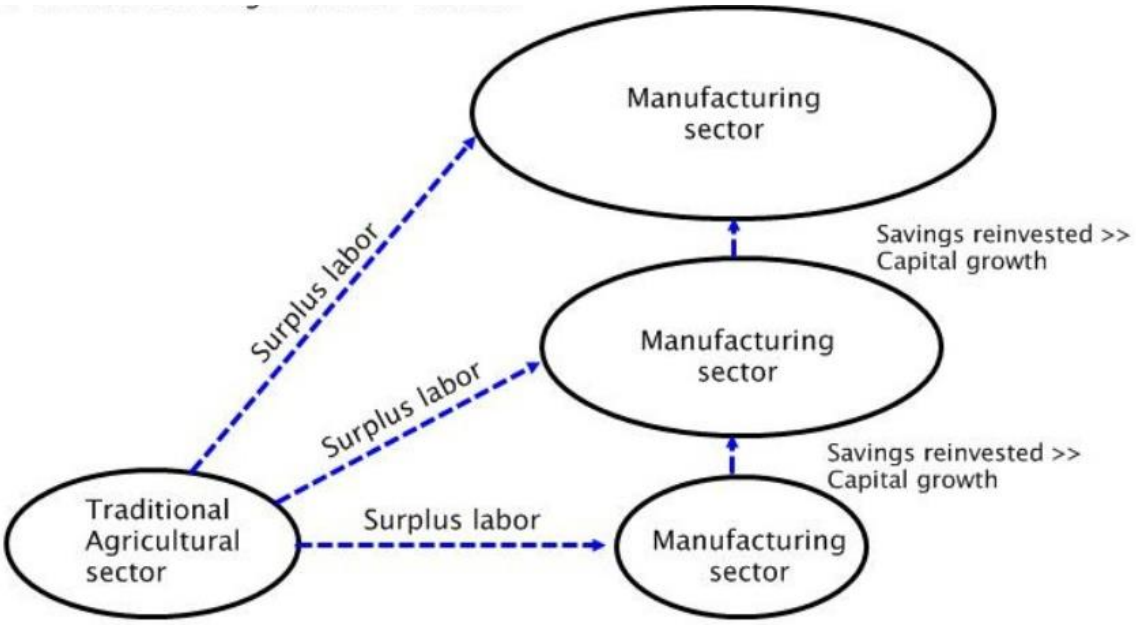
In the Philippines, Usui (2011) found through decomposition analysis that services-led structural change has not generated enough job opportunities. Over the years, the country is still suffering high unemployment (and underemployment) which is the highest in the ASEAN region. He also emphasized the importance of BPO industry which employs beneath 1% of the total labor force in the Philippines. Given the large amount of unused raw labor and the prospect of a young population to further increase labor force in the country, with proper utilization, it is not difficult to expect that the BPO industry may be the savior of the Philippine economy.

2.3 Theoretical framework

There are theories and studies that explain the structural change on labor productivity and employment. One of the best theories is the Structural Change Theory that explains how underdeveloped countries shift their national economic structure from a more traditional agriculturalized economy to a more modern industrialized and diverse manufacturing and service economy (Syrquin, 1988). This theory was further explained by the Lewis two-sector model by W. Arthur Lewis and later modified by John Fei and Gustav Ranis. According to their study, an economy starts with two sectors: a traditional agricultural sector and a modern industrial sector, which implies that higher productivity in the industrial sector promotes the transfer of economic resources from agriculture to the industrial sector in order to industrialize the economy and increase overall economic production. The theory also emphasizes that in a conventional two-sector economy model, an excess in agriculture plays a vital role in the overall economic structural transformation. This concept is summarized in figure 1.

Figure 1

Lewis' Structural Change Model of Growth



Source: Models of Economic Growth and Development

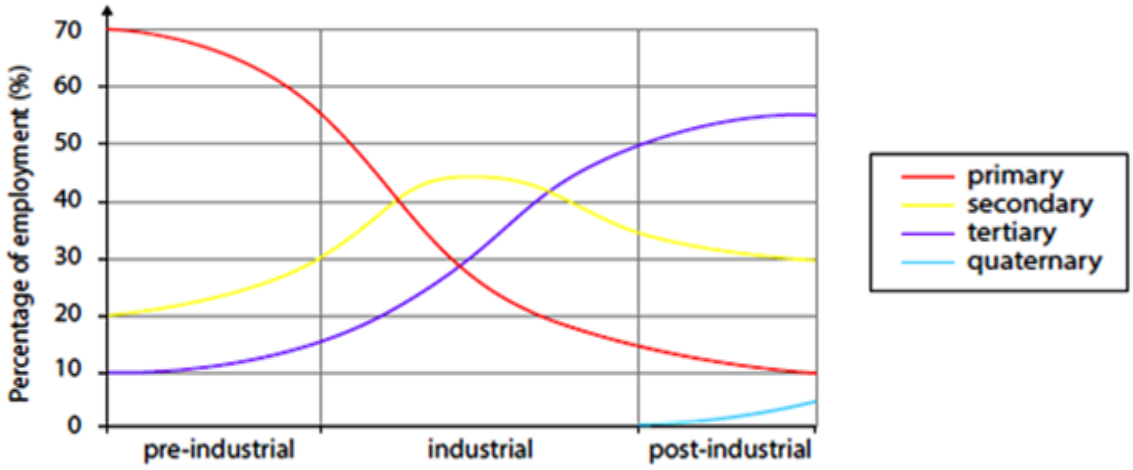
Figure 1 shows the flow of resources in the two sectors where the agricultural sector is at the maximum capacity and where the marginal product of labor is 0. This means that with the additional unit of labor, the production of the sector is still the same having a surplus of labor. This

surplus in labor is absorbed by the manufacturing sector while the existence of cheap labor in the manufacturing sector results to higher profit and higher savings. These savings are reinvested back in the industrial sector thus encouraging growth within, followed by the shifting of economic inputs from the agricultural sector to the industrial sector. As the industrial sector further expands, a reallocation of resources happens until such time that the industrial sector reaches maximum capacity where the marginal product of labor is 0 and cannot absorb additional unit of labor.

Another theory that relates to shifting of the economy and employment overtime, or structural change, is the three-sector model constituted by Allan Fisher, Colin Clark, and Jean Fourastié. The model represents the change in employment structuring as the economy of regions evolve overtime. It distinguishes four sectors of the economy which are primary (agriculture and fishing), secondary (manufacturing and industry), tertiary (producer services) and quaternary (knowledge services). The model is summarized in figure 2.

Figure 2

Clark-Fisher Model



Source: GCSE Revision Notes Unit 3 Economic change

Figure 2 shows that the share of employment in the primary sector decreases over time with the shares of the secondary sector and tertiary sector increasing until such time that the share of both sectors to employment declines and the quaternary sector emerges. It also shows that pre-industrial phase occurs when the declining primary sector has the largest share of employment, followed by the increasing share of secondary and tertiary sectors with estimated workforce quotas

of around 65% in the primary sector, 20% in the secondary sector, and 15% in the tertiary sector. The industrial phase occurs when the secondary sector starts to dominate the primary sector with the increasing share of the tertiary sector and with estimated workforce quotas of around 40% in the primary sector, 40% in the secondary sector, and 20% in the tertiary sector. Finally, the post-industrial phase occurs when the tertiary sector starts to decline with both primary and secondary sectors declining and the quaternary sector emerging in the economy with estimated workforce quotas of around 10% in the primary sector, 20% in the secondary sector, and 70% in the tertiary sector. This model is very useful in classifying the stages of structural transformation of an economy.

3. Methodology

This paper utilized quantitative research design with descriptive and empirical analysis to accomplish the objectives of the study. Descriptive statistics was utilized to comprehend and explain the behavior of the determinants, whereas inferential statistics was used to measure the relationship between the observed variables. The sectoral and aggregate productivity and employment statistics of the Philippines and seventeen (17) administrative divisions from 2004 to 2018 were all gathered and collected from the 2004 - 2018 Philippine Statistical Yearbook (PSY) edition which is published annually by the National Statistical Coordinating Board (NSCB).

3.1 Treatment of Data

Labor productivity growth in an economy can be attained in one of two methods. First, productivity can flourish within economic sectors through capital investment, technological advancement, and/or better allocation of capital resources. Second, labor can transfer across different sectors, moving out from low-productivity sectors to high-productivity sectors or vice versa, thus improving the total labor productivity in the economy in general.

3.1.1 Decomposition Analysis

The decomposition analysis of McMillan and Rodrik (2011), McMillan et al. (2016), and Bathla et al. (2019) were adopted to generate the share of “within sector” and “structural change” to the total changes in labor productivity in the Philippines and its regions. This is expressed using this mathematical equation:

$$\Delta PHP_t = \sum_{i=n} \theta_{i,t-k}\, \Delta PHL_{i,t} + \sum_{i=n} PHL_{i,t}\, \Delta\theta_{i,t}$$

Where:

PHP = Philippine labor productivity growth

PHL = Philippine labor productivity growth per sector i

Θ = Share of employment per sector i

The Δ symbol represents the change in productivity or employment shares between t-k and t. The first term in the decomposition is the weighted sum of labor productivity growth within individual sectors, where the weights are the employment share for each individual sector at the beginning of the time period. This is addressed as the "within" component of productivity growth. The second term represents the productivity effect of labor reallocations across different sectors. It is basically the inner product of productivity levels (at the end of the time period) with the change in the employment share across sectors. This second term is addressed as the "structural change". When changes in employment shares are positively correlated with productivity levels, this term will be positive and structural change will increase economy-wide productivity growth (McMillan and Rodrik, 2011; McMillan et al., 2016; Bathla et al., 2019).

Due to the unavailability of the updated Data on Labor Productivity in the Philippines, this paper used the formula of International Labor Organization (ILO) to manually extract the labor productivity of each sector and administrative region in the Philippines. The indicator on labor productivity is calculated as follows:

$$\mathrm{L} = \frac{\mathrm{RGDP}}{\mathrm{EMP}}$$

Whereas, labor productivity (L) is equal to the difference of Gross Domestic Product (RGDP) at 2018 constant prices and the total number of employed (EMP) persons.

This paper also manually computed the labor productivity level by using the formula:

$$\mathrm{LP} = \frac{\mathrm{L_t} - \mathrm{L_{t-1}}}{\mathrm{L_{t-1}}}$$

Whereas, labor productivity level (LP) is equal to the current less the previous labor productivity divided by the previous labor productivity.

3.2 Statistical Treatment of Data

3.2.1 Pearson Correlation

To find out the relationship of structural change to labor productivity and employment in the Philippine regions, Pearson Correlation test was used. This treatment was helpful to measure if there is a significant relationship between the variables. The Pearson Correlation can be a positive or negative correlation signified by the formula:

$$\mathbf{r} = \frac{S_{xy}}{\sqrt{S_{xx} S_{yy}}}$$

The value of Pearson is computed based on the following: r implies a good correlation or association between the variable X and Y, whereas if the value is near zero, it indicates little or no correlation (Gujarati, 2009).

3.2.2 Regression Models

3.2.2.1 Panel data regression analysis

To find out the effect of structural change to labor productivity and employment in the Philippine regions, panel data regression analysis was used. This is expressed using the following mathematical equation:

$$(1)\ SC = \beta_0 + \beta_1 LP + \beta_2 EMP + \mu$$

$$(2)\ LP = \beta_0 + \beta_1 SC + \mu$$

$$(3)\ EMP = \beta_0 + \beta_1 SC + \mu$$

Where:

LP = Labor productivity level

EMP = Employment

SC = Structural change

μ = Error term

Since the data is a mixture of cross-section and time series, the panel regression analysis is appropriate in controlling the regional effects which may be correlated with the independent variables in the specification. To assess the significance of each regressor coefficient, the t-ratio is used. This means that if the derived value exceeds the critical t-value at a desired level of significance, the null hypothesis is rejected.

3.2.2.2 Durbin-Watson Test

The Durbin-Watson Test helps determine if an autocorrelation exists in the data. The null hypothesis of the test offers the interpretation; no first-order autocorrelation exists. The e_{it} is the residual from an ordinary leased squared regression with fixed effects for each observational unit i, associated with the observation in panel i at time t, then the test statistics is:

$$d = \frac{\sum_{t=1}^{n} (e_1 - e_{1-1})2}{\sum_{k=1}^{n} t_i^2}$$

The Durbin-Watson statistics can be compared with tabulated rejection values. These values are derived dependent on T which is the length of the balanced panel time periods the individuals were observed. K is the number of regressors and N is the number of individuals in the panel. This test can also be utilized in assessing the null hypothesis of a unit root against stationary alternatives in fixed-effects models utilizing another set of bounds. After the pooled least square regression, the Durbin-Watson statistics tests the contemporaneous correlation in the panel regression. This is to determine whether to rely only on Seemingly Unrelated Regression Equation or run a separate panel regression for each dependent variable. The contemporaneous correlation occurs when the residual of the observed units each period is correlated. To the extent that these problems exist and not corrected, the analysis of the panel data using the pooled least square regression may produce incorrect analytic results.

3.2.3 Seemingly Unrelated Regression Equation

In order to analyze a group of multiple equations with cross-equation framework restrictions and correlated error terms, a Seemingly Unrelated Regression Equation is used in this study which is developed by Zellner (1962). According to Zellner (1962), the combined estimated equation models such as the Seemingly Unrelated Equation is much better than the independent equation solution methods where contemporaneous correlation is present because independent equation solution methods such as multiple regression models will suffer from simultaneous bias. The SURE method, also known as Zellner's method, calculates the parameters of the system, taking into account the heteroskedasticity and contemporaneous correlation in the errors across equations. This is expressed using this mathematical equation:

$$SC = \beta_0 + \sum \beta_1 LP + \sum \beta_2 EMP + \mu$$

Where:

LP = Labor productivity level

EMP = Employment

SC = Structural change

μ = Error Term

Whereas, structural change is a function of labor productivity and employment in the Philippine regions.

3.2.3.1 Breusch-Pagan LM Test

The Breusch-Pagan LM test was utilized in this study to choose between the Seemingly Unrelated Regression Model and the Pooled Least Square Regression Model. The null hypothesis in the Breusch-Pagan LM test is that variances across observations is zero, therefore, there is no significant difference across units. If the p-value is less than 0.05 level, the Generalized Least Square (GLS) of estimation of Seemingly Unrelated Regression is entirely different with the Pooled Least Square Model, thus the residual are correlated across regions and the Generalized

Least Square estimator is more efficient to use compare with the Pooled Least Square. If the result it is greater than the 0.05 level, accepting the Pooled Least Square Modelling is more preferred than Generalized Least Square of Seemingly Unrelated Regression Model.

4. Findings and Discussion

Table 1

Average Labor Productivity and Labor Composition in the Philippines

Region	Average Labor Productivity	Labor Composition Average (A/I/S)
NCR	901,072.49	1%/ 19%/ 80%
Region IV-A	381,585.20	9%/17%/74%
Region III	341,201.03	15%/24%/61%
CAR	321,637.82	43%/15%/42%
Region XI	292,460.48	31%/17%/52%
Region X	285,079.29	36%/16%/48%
Region VII	261,828.97	21%/22%/57%
Region IV-B	214,669.25	35%/7%/58%
Region I	214,076.71	27%/18%/55%
Region VIII	207,619.42	34%/15%/51%
Region VI	195,949.73	31%/15%/54%
Region IX	192,732.57	41%/12%/ 47%
Region XII	188,528.06	42%/14%/44%
Region II	185,942.51	47%/11%/42%
CARAGA	183,905.94	34%/16%/50%
Region V	153,919.21	31%/18%/51%
ARMM	150,900.09	61%/6%/33%
Philippines	**334,977.20**	**24%/19%/57%**

Table 1 shows the average labor productivity and average labor composition of each region in the Philippines from 2004 to 2018. It shows that NCR, a service sector economy, has the highest

labor productivity among the regions, followed by Region IV-A and Region III which are also service sector economies. On the other hand, the top three lowest labor productivity are ARMM which is an agricultural sector economy followed by Region V and CARAGA that are both service sector economies. CAR being an agricultural sector economy has high labor productivity since it is abundant in natural resources and also rich in high-valued mineral reserves. Gold, copper, silver, and zinc are among the precious minerals which are great contributions to their labor productivity. Although mineral reserves are found all over Cordillera, mining is concentrated in Benguet, and almost all of Cordillera's economic activity is still focused on farming and small-scale production (Department of Agriculture, 2020). CARAGA and Region V are service sector economies but have relatively low-labor productivity mainly because CARAGA region is mainly based on wood economy and according to Paqueo and Silfverberg (2015), there is unlimited possibilities for the wood industry in the CARAGA region, but the conceived possibilities of the wood processing industry in CARAGA is not yet fully explored because of policy, regulatory, and production issues. On the other hand, Region V is one of the most vulnerable areas for natural disaster in the country because of its geographical location, and natural hazards, mainly storms, floods, and volcanic eruptions greatly affect its productivity (FAO, 2020).

Figure 3

Decomposition of "Within" and "Structural Change" in the Changes in Average Regional Labor Productivity Growth in the Philippines from 2004 to 2018

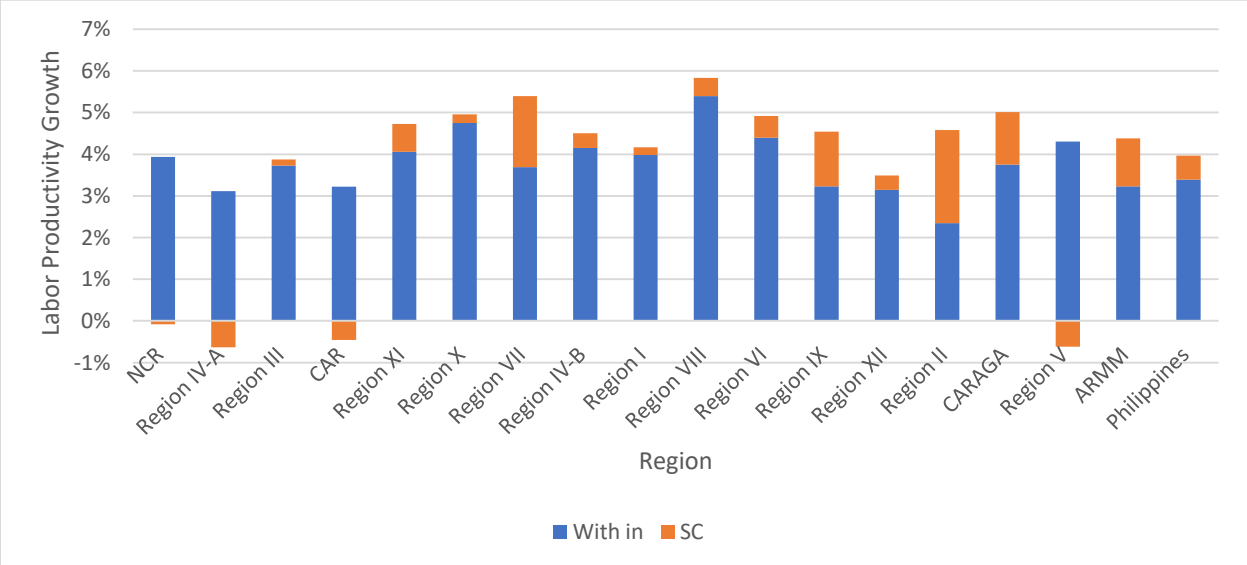


Figure 3 shows decomposition of "within" and "structural change" in the changes in regional labor productivity growth in the Philippines averaged from 2004 to 2018. It shows that NCR, CAR, Region IV-A, and Region V experience a negative contribution of structural change in the total labor productivity growth having Region IV-A as the highest with -0.63%, followed by Region V with -0.62%, CAR with -0.45%, and NCR with -0.08%. This is because both NCR and Region IV-A are service economies with 80% and 74% of their labor force, respectively, which indicate that both regions have high productivity and high income. According to Forster-Mcgregor and Versapen (2016), changes in labor productivity are mostly brought by the changes "within" instead of structural change in high income economies which is the case in both NCR and Region IV-A. Additionally, it also indicates a growth reducing property of structural change as mentioned by Mcmillan and Rodrik (2011). One of the reasons is that the economy cannot absorb the surplus labor due to skills mismatch, like in the case of Mexico where structural change emerged to be growth-reducing during the period 2005 to 2016 mainly due to the reallocation of their low-skilled labor to other sectors (Escobar & Muhlen, 2019).

CAR and Region V are rich in natural resources and have abundant mineral reserves. According to Mcmillan and Rodrick (2011), economies with revealed comparative advantage in raw materials are at a disadvantage because in economies with a relatively large share of natural resources in exports, structural change has typically been growth reducing because they cannot also absorb the surplus labor from agriculture. In addition, Region II has the highest share of structural change in their labor productivity growth with the value of 2.24%, followed by Region VII with 1.71%, and Region IX with 1.32%, which shows a great potential for growth-enhancing structural change as what Forster-Mcgregor and Versapen (2016) mentioned in their study. Structural change in low income economies has a significant portion to the total labor productivity growth just like in the case of Region II and Region IX which are agricultural regions.

Meanwhile, Region VII is one of the eight anchor tourist destinations in the Philippines and one of the supra-regions in the Visayas that relies on tourism as per the Department of Trade and Industry. According to Turner and Sears (2013), tourism sector is labor sponge sector. It absorbs surplus labor and is relatively more effective in creating jobs than any other sectors since surplus of labor in Region VII can be absorbed by the tourism sector. This is why the region experiences a greater growth-enhancing structural change than any of the other regions (Mcmillan & Rodrick, 2011).

Table 2

Descriptive Statistics and Correlations Among Structural Change (SC), Labor Productivity Growth (LP), and Employment (EMP)

	Descriptive statistics						Correlation	
Variable	**Mean**	**Std. Dev.**	**C. V.**	**Min**	**Max**		**LP**	**EMP**
SC, %	0.51	2.27	4.45	-11.35	6.7		0.11	-0.13
						P- Value	0.08	0.04
LP, %	4.35	6.53	1.5	-35.46	75.55		1	-0.07
EMP, ('000)	2148.87	11198.87	5.21	621	5913		-0.07	1

Table 2 shows the mean, standard deviations, coefficient of variation, minimum and maximum values, along with the correlation coefficients among the observed variables structural change, labor productivity and employment in the Philippine regions. It shows that structural change has a range of -11.35% to 6.7%, labor productivity has a range of -35.46% to 75.55%, and employment has a range of 621,000 to 5,9130,000. Results further show that all coefficient of variation of structural change (4.45), labor productivity growth rate (1.5), and employment (5.21) are greater than 1 indicating high variability of the data and high inequality among the regions in terms of structural change, employment and labor productivity. In addition, the correlation of structural change to labor productivity is 0.11 and significant at 10% level of significance with a p-value of 0.08, which indicates a very weak positive correlation among the two variables. Structural change to employment is -0.13 and significant at 5% level of significance with a p-value of 0.04 indicating a very weak negative correlation among the two variables. Therefore, the first null hypothesis that structural change has no significant correlation on labor productivity and employment is rejected.

To test the significant effects of structural change to labor productivity and employment, pooled least square, Durbin-Watson test, panel data regression analysis, and seemingly unrelated regressions analysis were performed.

Breusch-Pagan LM Test was utilized to identify which is better between the two.

Table 3

Pooled Least Square Results

Independent Var.		Intersect	Labor Productivity	Employment
Structural Change	Estimate	-0.12	0.11	0.09
	SE	0.27	0.04	0.04
	p-value	0.65	0.01	0.03
R- squared	0.03		F- statistics	3.97
Adj R- Squared	0.02		F- statistics (prob.)	0.02

Table 3 shows the regression results of labor productivity and employment to structural change using pooled least squared model. Based on the result, it shows that labor productivity (LP=0.11) and employment (EMP=.09) are significant determinants of structural change (SC) at 5% level of significance with a p-value of .01 and .03, respectively. The value of R-Squared is .03, which means that 3% of the changes in structural change can be explained by the changes in labor productivity and employment. It also shows that labor productivity and employment are positively related to structural change. This signifies that structural change will increase (decrease) if labor productivity and employment increase (decrease). This arrives at the econometric equation:

$$SC = -0.12 + 0.11\ (LP) + 0.09(EMP) + \mu$$

Based on the econometric equation, it can be explained that 1% increase in labor productivity will result to 0.11% increase in structural change, and a 1,000 increase in employment will result to 0.09% increase in structural change in the Philippines with a constant value of -0.12%.

Table 4

Durbin-Watson Test Results

Durbin-Watson Statistics			Sig.
DW	d_u	1.81	1.93
	$4 - d_u$	2.19	

Table 4 shows that the Durbin-Watson statistics of the ordinary least square regression is in the lower and upper limit of the Durbin-Watson statistics. Therefore, there is no autocorrelation present in the regression. This means that there is no contemporaneous autocorrelation that occurs in the model which are the residuals of the units observed at each period in time (not correlated). Therefore, it is better to have each equation estimated separately by OLS, since based on the Durbin-Watson statistics results, it is implicitly assumed that the error terms are not contemporaneously correlated. To validate these observations, this study run Pooled Least Square and Seemingly Unrelated Regression Equation model. Breusch-Pagan LM Test was also employed to determine whether Pooled Least Square or Seemingly Unrelated Regression Equation model is more appropriate.

Table 5

Panel Regression Equation (PLS) and Seeming Unrelated Regression Equation (SUR) Results

Dependent Var.		Labor Productivity		Employment	
Estimation Method		PLS	SURE	PLS	SURE
Intersect	Estimate	4.19	4.19	2184.26	2184
	SE	0.42	0.42	76.49	76.19
	p-value	0	0	0	0
Structural Change	Estimate	0.31	0.31	-68.74	-68.74
	SE	0.18	0.18	32.97	32.84
	p-value	0.08	0.08	0.04	0.04
R- squared		0.01	0.01	0.02	0.02
Adj R- Squared		0.01		0.01	

Table 5 shows the regression results of structural change to employment and labor productivity using both panel regression model and seemingly unrelated regression model. As gleaned from the table, both seemingly unrelated regression equation and panel regression equation have identical results. Since they have identical results, this study interprets the results as one.

Structural Change and Labor Productivity

Based on the regression results shown in Table 2, structural change (SC=0.31) is a significant determinant of labor productivity (LP) at 10% level of significance with a p-value of 0.08 having a constant value of 4.19. Therefore, the second null hypothesis, structural change has no significant effect on labor productivity growth is **rejected**. In addition, the value for R-Squared is .01 which means that 1% of the changes in labor productivity can be explained by the changes in structural change. It also shows that structural change is positively related to labor productivity which means that labor productivity will increase (decrease) if structural change increases (decreases). This arrives at the econometric equation:

$$LP = 4.19 + 0.31\ (SC) + \mu$$

Based on the econometric equation, 1% increase in structural change will result to 0.31% increase in labor productivity in the Philippines with a constant value of 4.19%, which clearly proves that structural change has a significant effect on labor productivity in the country. This is explained by most of the cited literature that the movement of resources from low-productivity activities to high-productivity activities is a key driver of development, thus increasing the overall labor productivity growth of the country (Bah, 2009; Briones & Felipe, 2013; Bustos et al., 2013; Bayar et al., 2013; Inklaar & Timmer, 2009; Johnston & Mellor, 1961; Mcmillan & Rodrik, 2011; Mcmillan et al., 2014; Martin, 2019; Stegman, 2011; Vos, 2019).

Structural Change and Employment

Based on the regression result shown in Table 2, structural change (SC=-68.74) is a significant determinant of employment (EMP) at 5% level of significance with a p-value of 0.04 having a constant value of 2,184.26. Therefore, the third null hypothesis, structural change has no significant effect on employment is **rejected**. In addition, the value for R-squared is .02 which means that 2% of the changes in employment can be explained by the changes in structural change. It also shows that structural change is negatively related to labor productivity which means that employment will decrease if there is increase in structural change. This arrives at the econometric equation:

$$EMP = 2184.26 - 68.74\ (SC) + \mu$$

Based on the econometric equation, 1% increase in structural change will result to a 68,700 decrease in employment in the Philippines with a constant value of 2,184,260, which clearly proves

that structural change has a significant effect in the economy in terms of labor markets. Increasing labor productivity through a fast-paced structural transformation has negative effect on the employment (Afsar & Mecik, 2014; Escobar & Muhlen, 2019; Filipe, 2019) resulting to a "structural unemployment" – a kind of unemployment where there is a mismatch between the skills that the labor force can offer, and the skills needed by the labor market. This happens because most of the labor force will be coming from the low-skilled agricultural sector to be absorbed by the labor market of the high-skilled industrial and service sectors during a fast-paced structural transformation. This explains the importance of higher educational attainment and trainings and seminars during a fast-paced structural transformation because skills are necessary for labor mobility (Ando & Nassar, 2017). This also confers countries with more flexible labor markets experience greater growth-enhancing structural change (Mcmillan & Rodrik, 2011).

To determine whether Pooled Least Square or Seemingly Unrelated Regression Equation model is more appropriate, this study used Breusch-Pagan LM Test as shown in table 6.

Table 6

Breusch-Pagan Test of Independence

Chi	**0.682**
Probability	**0.4089**

If probability value is greater than 0.05, PLS is more appropriate than SUR model
If probability value is less than 0.05, SUR model is more appropriate than PLS.

The test results with a probability value of 0.4089 is higher than the 0.05 level of significance. Therefore, Pooled Least Square is more appropriate than Seemingly Unrelated Regression model.

5. Conclusion

This study found that structural change has a positive relationship to labor productivity in the Philippines and its regions. This means that when structural change increases, labor productivity also increases or vice versa ceteris paribus, where the main reason is the transfer of labor out of the low-productivity agriculture sector to high-productivity industry and service sector. This is evident during structural change thus encouraging the increase of overall labor

productivity in the Philippines. Furthermore, structural change has a negative relationship to employment in the Philippines and its regions. This means that when structural change increases, employment decreases, or vice versa ceteris paribus, which proved that increasing labor productivity due to a fast-paced structural change has a negative effect on the employment. This study also proved that Structural Change Theory, Lewis two-sector model and Clark Fisher Model are true and evident in the Philippines.

As then President Rodrigo Roa Duterte signed Executive Order (EO) No. 140 officially adopting the National Employment Recovery Strategy (NERS) and formulating the NERS task forces which are chaired by the Department of Trade and Industry (DTI), Department of Labor and Employment (DOLE), and Technical Education and Skills Development Authority (TESDA), this serves as the Philippine government's roadmap for the revival of the labor market hit by the COVID-19 pandemic. It is recommended that the task force should not only consider the changes in the labor market brought by the pandemic but also the service-led structural change. Specifically, this study would like to recommend the following programs and policies to the NERS taskforce:

- Programs that focus on increasing the human capital of its labor force through subsidizing education, trainings, and seminars because workers with higher skillsets are much needed in a fast-paced structural transformation to experience greater growth-enhancing structural change. If not taken into account, structural change can be growth-reducing mainly due to the reallocation of low-skilled labor within subnational units which increases inefficiency in the economy and thus reduces overall growth (Escobar & Muhlen, 2019).
- Programs that will focus on labor-saving techniques for the agricultural sector like research and development and mechanization or modernization of the agricultural sectors, since the labor force is moving out from the agriculture sector to the industry and service sectors during a fast-paced structural transformation. These are likewise good substitutes for human labor.
- Programs that will absorb the structural unemployment brought by the fast-paced structural transformation like a “public option employment” where the government will be the employer as a last resort.
- Policy that develops education models that can keep up with the fast-paced structural transformation, especially now that the world economy is at 4th Industrial revolution

(Schwab, 2016). Adapting Education 4.0 framework which provides a vision on how school systems can be updated to deliver children's future needs (World Economic Forum, 2020) must be the country's direction. This is focused on smart technology, artificial intelligence, and robotics. Likewise, this means teaching students about these technologies as part of the curriculum, changing the approach to learning altogether, and utilizing these technologies to better improve the learning experience. This is crucial since it is essential to prepare the future labor force to adapt to the changing labor market with the threat of automation and jobs being obsolete.

During a fast-paced structural transformation, this study would like to recommend that private individuals invest in their human capital through higher education, trainings, and seminars since learning new skills is much needed to adapt to a fast-paced structural transformation. Flexibility and adaptability are necessary to survive in the changing labor market environment. Especially today, the world economy is now at the 4th industrial revolution – a process of ongoing automation of traditional manufacturing and industrial practices using modern smart technology. This is unlike the previous industrial revolutions. The 4th industrial revolution is evolving at an exponential rather than a linear pace. According to Schwab (2016), during the 4th Industrial revolution, employment will grow in the knowledge service sector, but it will greatly diminish for the industry and product service sectors because of their nature – routine and repetitive jobs – which are easily automated. In this research, it is recommended that other researchers, students, scholars, and educators must study the long-run and short-run relationships and effects of structural change to macro-economic variables to have a better picture of the overall effects of structural change to the economy with the focus on 4th industrial revolution.

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University Students' Awareness on Intellectual Property Rights

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Abstract

The study aimed to determine the level of students' awareness regarding intellectual property rights at one state university in the Philippines. This study used the descriptive research method, employing the online instrument distributed to the 506 students from different colleges. The study used a modified adapted survey questionnaire. Descriptive statistics was used such percent, mean, frequency count, and inferential data using the Kruskal Wallis H-Test. The study revealed that the respondents were aware of the aspects of copyrights, patents, trademarks, industrial designs and geographical indications. However, the respondents were neither aware nor unaware on the aspects of the utility model. Moreover, the study revealed significant difference in the level of students' awareness when grouped according to different IP rights. Therefore, full awareness on the intellectual property rights is vital as there are implications on the protected materials, works and inventions that may lead to infringement for its improper use. Hence, to maintain the level of awareness of students regarding intellectual property rights, it is recommended that the university adopt tactics and resources for wide dissemination, such as an intellectual property rights manual, to enhance the knowledge of its students.

Keywords: *Intellectual Property Rights, Copyright, Patents, Utility Model, Industrial Design*

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1. Introduction

The Intellectual Property Office of the Philippines and the World Intellectual Property Organization (WIPO) describe Intellectual Property (IP) as creations of the mind which can be in form of inventions, brand names and images used in commerce, designs, literary and artistic works, and symbols. According to WIPO, the six types of intellectual include copyright, patent, trademarks, industrial designs, trade secrets, and geographical indications. Copyright is basically the given legal rights for literary and artistic works which cover advertisements, books, computer programs, databases, films, maps, music, paintings, sculpture, and technical drawings (Padil et al., 2020). Patent is the exclusive right given to new invention and useful products. Trademark is considered to enterprise's distinguished sign compared to other enterprises (Ahmed & Varun, 2017). Industrial design may come in two- or three-dimensional features, is a pattern, line, color, shape or surface which creates the aesthetic aspect of an article (Heer et al., 2021). Trade secrets are IP rights on confidential information while geographical indications are names of place as origin of a particular goods (WIPO, 2022). However, in the Philippines, the last two types are not included; instead, utility model is listed and recognized as such. Utility model is like patent but does not include condition of the involvement of an inventive step to be protected (IPOPHIL, 2022). Laws protect intellectual property to recognize and give benefits to the creators and intellectual property laws ensure the balance interest of both the innovators and the public consumers; thus, awareness of IP is vital and necessary.

In the 21st century, appropriate comprehension and awareness are becoming crucial instruments in the processes of the expertise economy. As a result, all members of the university environment, particularly authorities, administration, personnel, and learners, must have enough exposure to IP literacy and awareness. The proper use of the IP system necessitates a wide range of knowledge and skills. Copyright and intellectual property rights (IPR) are the main determinants of creativity and innovation (Bach et al. 2010).

Sulekha and Singh (2018) studied the IPR awareness of 50 research scholars of Kurukshetra University Kurukshetra. It has found that among the respondents, male (53%) were more IPR knowledgeable, 26 (52%) researchers knew about copyright, and 23 (46%) identifies IP as a right. The study concluded that large number of research scholars were unaware of IPR hence need of seminar and workshop about it. Moreover, Ahmed and Varun (2017) found out that there is a need for some explanations about the use and importance of IPR; hence suggested, that

seminar, workshop, and conference regarding IP should be upheld. Similarly, a national survey in the United Kingdom was done to investigate attitudes to, awareness of and aspirations for IP higher education and further education students. The study emphasized the importance of libraries in IP like signposting students and staff to external resources to help them with specialist tasks such as finding and using information about patents and obtaining specialist advice on IP issues (McNicol, 2013). In the two Malaysian universities, LimKokWing University (LKW) and Multimedia University (MMU) in Cyberjaya, Ong et al. (2012) found that promoting IPR awareness among the students can be done using social networks and the university's site and intranet, active participation by relevant government bodies and universities, and activities like talks, seminar, contests and training on IPR.

The importance of property rights education, communication, and understanding ensures the rights to accomplishments resulting from a range of innovative industrial activities and safeguards the authors' ownership of their accomplishments over a certain length of time. As Boon-Ong et al. (2012) emphasized, enhancing IPR awareness includes the supply of appropriate documentation, public engagement among governmental agencies and institutional administrations, and IPR education initiatives. Furthermore, Kur (2022) found that the Benue State University's inability to have a well-IPR policy framework has impacted the characterization of concepts among some of the major stakeholders, to wit; research students, program professionals, and research scholars, and this, if not acknowledged, seems to be capable of affecting higher education in the coming years.

From these studies and their impositions, this study generally aims to identify the level of awareness of the students in IP rights in terms of copyright, trademarks, patents, utility model, industrial design, and geographical indications. In particular, the difference in the level of awareness of students when grouped according to types of IP rights and colleges/course will be determined.

2. Literature Review

Intellectual property rights have always been a regular issue in all fields of study. It is critical not only for attorneys, justices, and legal professionals, but also for designers, researchers, musicians, craftsmen, ranchers, and even academicians. Therefore, WIPO, a specialized agency of the United Nations, plays a vital role in the worldwide platform in fostering the education of

intellectual property laws in academic institutions (Alikhan & Mashelkar, 2009). It also founded the WIPO World Wide Academy (WWA) to serve as an educational establishment promoting IP education, development, comprehensive instruction, and regulatory mentoring (Oguamanam, 2016).

According to Spinello (2007), copyright laws give the owner full ownership of his or her original thoughts and even the right to make duplicates for distribution. As a result, a complete absence of awareness and information on intellectual property (IP) among lawmakers and their governing bodies will indeed impede the development and execution of IPR (Said, 2010). Therefore, the importance of property rights education, communication, and understanding ensures the rights to accomplishments resulting from a range of innovative industrial activities and safeguards the authors' ownership of their accomplishments over a certain length of time.

According to Ogiya et al. (2018), intellectual property is distinguished by the fact that it is not tangible information but rather an object with a property value. Information is easily copied, does not deplete when used, and may be used by a huge number of individuals at once. IP derived from these areas of expertise was valuable financially. Therefore, education and knowledge of IP will increase understanding of their presence and preserve the correct use of IP (WIPO, 2004). As concluded in the study by Ong et al., (2012), enhancing IPR awareness includes the supply of appropriate documentation, public engagement among governmental agencies and institutional administrations, and IPR education initiatives.

The knowledge and awareness of IP and IP rights are becoming an issue. For instance, study of Ahmed and Varun (2017) revealed that the majority of respondents are unaware of intellectual property rights and have little information concerning the equitable utilization of copyright. Similarly, survey at Durban University of Technology conducted by Bansi and Reddy (2015) found that majority of participants did not understand or agree with licensing rules of the IP Act and were acceptable and were uninformed that their discovery might lead to intellectual property. Another informal survey of intellectual property awareness among engineering students at the University of California, Los Angeles (UCLA) highlighted the difficulties of safeguarding IP in American universities. Therefore, Pickethly (2010) contends that IP awareness is required to run a functional IP system; however, it is critical to define the knowledge and thus what must be fostered for an IP system to function. The need to raise programs to improve student teachers' understanding of what IP is and why it pertains (Villasenor, 2012). Despite the lack of awareness

and knowledge, students agree that understanding intellectual property is vital not just for their current schooling but for their future professions (McNicol 2013).

Patents, trademarks, service marks, industrial design registrations, copyrights, and trade secrets are examples of intellectual property rights. Consequently, the designers must keep this system design to maintain it. Both the owners and the consumers of intellectual property should have a deeper understanding and awareness. Nevertheless, making appropriate use of the informational system of the property will create social chaos. Understanding the value of patent rights is critical for technical education (Pathan & Anandhalli, 2019). As a result, it raises awareness of IPR in educational institutions, including efforts to address, workshops, special presentations, lecturers, and skill training. Therefore, it is suggested that every school of higher education must support intellectual property rights. To gain an actual understanding of plagiarism and proper utilization of copyrighted content or information, learners may indeed be given a guidebook with information concerning the implications of IPR violations of the law. Shrivastava (2018) indicates that students require some in-depth discussions of intellectual property rights, as well as their application and significance. Studies also show students' lack of knowledge and awareness about intellectual property rights. Therefore, universities and organizations must organize lectures concerning intellectual property rights and include them in the curriculum.

3. Methodology

This study used descriptive research design which explains what was observed and typically includes documenting or counting remarks about a novel or unusual circumstance (Maxfield & Babbie, 2015). Moreover, it determined the respondents' level of awareness on the various aspects of IPR.

The study included 506 students from different colleges such as College of Computer Studies (CCS), College of Criminal Justice and Education (CCJE), College of Teacher Education (CTE), College of Arts and Sciences (CAS), College of Agriculture (CA), College of Business, Management, and Accountancy (CBMA), College of Hospitality, Management and Tourism (CHMT) and College of Engineering (CoE). The study employed convenience sampling technique in the selection of the participants.

The study adapted the survey questionnaire from Amparado and Miro (2020) as the main data gathering tool. The questionnaire was composed of two parts: demographic profile of the respondents and the questionnaires on IPR such copyright, trademark, utility model, patent, industrial designs and geographical indication. The questions were answered using 5-point Likert-type scales through fully aware to not aware.

The study created the survey questionnaire using Google Forms to distribute to the target respondents. In order to get maximum participation, the survey questionnaire was posted during the conduct of webinar activities of the university as well as through the social media page. It was assured that the data gathering was permitted and has consent from the respondents prior to the submission and answering the survey. The survey was voluntary and participants were oriented on the objectives of the study. It was also assured that data gathered were treated with utmost confidentiality and personnel information was not disclosed at any stage of the study.

Descriptive statistics like percent, weighted mean, and frequency count were used to examine the collected data. Inferential data analysis was carried out using the Kruskal Wallis H-Test.

4. Results and Discussions

Table 1

Level of Students' Awareness on Intellectual Property Rights

Indicators	Mean	Interpretation
Copyright		
Copyrights allow the owner to derive financial reward from the use of his/her works	3.7	A
Copyright protection is acquired automatically without the need for registration	3.61	A
Copyrights last equal to 50 or more years	3.39	NANU
Copyright laws are territorial. They apply in the country in which they passed.	3.59	A
An owner of the work provides authorization for others to use or exploit.	3.74	A
The owner of the work has the right to disallow its broadcast from the radio or television.	3.77	A
The owner of the work has the right to oppose changes to a work.	3.79	A
Grand Mean	**3.66**	**A**
Patent		
An invention is considered new or novel if it is not known to the public through publication or prior use.	3.59	A
Inventions are granted a patent if it involves an inventive step.	3.56	A
Inventions are granted a patent if it is industrially applicable.	3.56	A

Patents are granted if they offer technical solution to a problem in any field of human activity.	3.56	A
Term of the patent is 20 years from the date of filing and is not renewable after.	3.44	A
A patent must be shared in return of the protection after a specified time.	3.49	A
A patent in one country cannot prevent other people from copying it in other countries.	3.51	A
Grand Mean	**3.53**	**A**
Utility Model		
Ums are called "short-term patents" or "innovation patents."	3.23	NANU
In UM protection, the invention cannot be commercially made, used, distributed or sold without the consent of the UM owner.	3.27	NANU
Term of protection for Ums are between 7 to 10 years.	3.19	NANU
UMs are cheaper to obtain and maintain.	3.23	NANU
Registration of UM protection is simpler and faster.	3.29	NANU
UMs are non-renewable.	3.2	NANU
UM protection is territorial which means the right can be enforced only within the country in which a utility model is granted.	3.26	NANU
Grand Mean	**3.24**	**NANU**
Trademarks		
TMs are signs capable of distinguishing the goods or services of one enterprise from others.	3.5	A
The symbol ® means that a name/logo is protected.	3.57	A
Trademarks are filed in respect of different goods and services.	3.58	A
Trademark is any visible sign to indicate the origin, quality and ownership of a product or service.	3.65	A
Duration of trademarks is 10 years and renewable every 10 years.	3.36	NANU
Trademarks can be bought and sold.	3.47	A
A trademark registered in a country does not cover the use in other countries.	3.41	A
Grand Mean	**3.51**	**A**
Industrial Designs		
Protects the ornamental or aesthetic aspect of a useful article	3.44	A
ID are relevant to graphic symbols, graphical user interfaces (GUI) and how a product looks	3.49	A
Industrial Design (ID) may consist of three-dimensional features or two-dimensional features such as lines, patterns and colors.	3.49	A
ID protection is lifetime protection.	3.44	A
Grand Mean	**3.47**	**A**
Geographical Indications		
GI are signs used on goods that have specific geographical origin possessing a reputation.	3.41	A
Protection for a GI is obtained by acquiring a right over the sign that constitutes the indication.	3.4	NANU
GI are used for agricultural products, wines, handicrafts and industrial products	3.42	A
Grand Mean	**3.41**	**A**

Legend: Fully Aware (FA) 4.21 – 5.00; Aware (A) 3.41 – 4.20; Neither Aware Nor Unaware (NANU) 2.61 – 3.40; Less Aware (LA) 1.81 – 2.60; Not Aware (NA) 1.00 – 1.80

Table 1 displays the level of students' awareness on the basic IPR. Each type of IP is denoted by several indicators signifying the level of knowledge and awareness.

Data revealed that the respondents are aware on the IPR in terms of copyrights. The respondents are aware of financial reward (3.70), automatic acquisition of protection even without the need of registration (3.61), application of the copyright law is territorial (3.59), owners' authorization in the use of his work by other entity (3.74), the right to disallow in broadcasting its work (3.77), and the right to oppose changes to a work (3.79). However, on the indicator of time that copyright is useable, it shows that the respondents with the mean of 3.39 which is neither aware nor unaware. This means that students of one university in the province of Laguna are aware on the intellectual property rights as gained in various information campaign of the ITSO office. Moreover, respondents also state that information about copyright gives them opportunity to protect their work related to their academic activities. The findings are congruent with the study of Arnold et al. (2016) that interestingly supports the idea that being literate and knowledgeable in intellectual property can enhance information literacy and also competitiveness of the students.

In terms of patens, the results showed a grand mean of 3.53 interpreted as aware. Respondents believed that the work through invention should protected by applying it into patents. The highest mean (3.59) among the indicators was the invention that is considered new or novel if it is not known to the public through publication or prior use. On the other hand, the lowest mean of 3.51 shows that the patent in one country cannot prevent other people from copying it in other countries. These contradict the study of Ahmed and Varun (2017) which showed that just 30% of research scholars are aware that technological innovations are covered by patents while 50% of research scholars are unaware of patents. It indicates that even some researchers and students are not so much aware and literate about intellectual property specifically patent.

In the university where that study was conducted has different products that has utility model certification. These products were enjoyed by both employees and students. However, data on revealed that the respondents are neither aware nor unaware on the utility model with the grand mean of 3.24. This means that the respondents are using the products that are awarded with utility model certification however in the aspect of certification process and rights has less awareness how the right was given.

Awareness of the respondents on intellectual property rights in the aspects of trademarks revealed that they are aware on the right of trademarks. However, in terms of its duration of usability, results revealed with the mean of 3.36 that the respondents are neither aware nor unaware. This conforms to the validation conducted to the respondents that they are aware on the so-called trademarks but not on its time of use. Similarly, they stated that as long as they see

symbol for trademarks, it is governed and protected by law that it is no longer in use by other entities for business purposes. The results are similar to the findings of Ahmed and Varun (2017) on the relative and significant findings on awareness about intellectual property in the aspect of trademarks. Based on the result of the study, it shows 43% respondents are aware about the importance of trademark while 3% are unaware of it.

In terms of industrial designs, the respondents are aware with the grand mean of 3.47. Looking into the parameters, both the relevance of graphic symbols, graphical user interfaces and how the products looks and the dimensional features had a mean of 3.49. On the other hand, in terms of the protection of the ornamental or aesthetic aspect of useful article and the duration of protection both had a mean of 3.44.

In terms of geographical indications, data revealed that the aspect of geographical indications is used for agricultural products, wines, handicrafts and industrial products with the mean of 3.42 interpreted as 'aware'. On the other hand, the awareness on the signs used on goods that have specific geographical origin possessing a reputation with the mean of 3.41 interpreted as 'aware'. However, in terms of the protection for a GI is obtained by acquisition of right over the sign that constitutes the indication, revealed that respondents are neither aware nor unaware. Moreover, Sharma (2014) denotes that GI is a product originates from a specific location and has unique traits as a result of that location, which could be a village or town, a region, or a country. The advantages of its registration are shared by all members of the community because it is an exclusive privilege granted to a certain group of people.

Table 2 shows the distribution of the awareness level according to the college where the student-respondents belong. This particularly tests any significant difference on the awareness levels of the students depending on their enrolled course or program. With the different colleges' strategies and activities related to IP, the study expects that students were exposed to various activities, seminars, programs and interventions that keep them aware of the different aspects and facets of IPR. At .05 level of confidence, the p-value should be lower than or equal to .05 to be significant. The results clearly indicate any differences on the level students' awareness by college.

Table 2

Level of Students' Awareness as grouped according to college

Awareness	College	N	Mean Rank	Computed Value	p-value	Decision	Interpretation
Copyright	CTE	83	257.78	7.218	0.407	Failed to Reject Ho	Not Significant
	CAS	14	333.04				
	CBMA	81	259.97				
	CCS	68	240.2				
	CCJE	26	285.13				
	CA	41	239.09				
	COE	12	258.33				
	CHMT	181	245.89				
Patent	CTE	83	245.42	6.387	0.495	Failed to Reject Ho	Not Significant
	CAS	14	318.61				
	CBMA	81	258.35				
	CCS	68	264.6				
	CCJE	26	289.15				
	CA	41	236.62				
	COE	12	240.62				
	CHMT	181	245.39				
Utility	CTE	83	226.95	14.068	**0.05**	**Reject Ho**	**Significant**
	CAS	14	295.39				
	CBMA	81	231.78				
	CCS	68	268.38				
	CCJE	26	309.21				
	CA	41	225.61				
	COE	12	221.08				
	CHMT	181	267.03				
Trademarks	CTE	83	243.17	13.096	0.07	Failed to Reject Ho	Not Significant
	CAS	14	332.43				
	CBMA	81	263.9				
	CCS	68	268.29				
	CCJE	26	293.9				
	CA	41	214.7				
	COE	12	300.58				
	CHMT	181	241.78				

Industrial Design	CTE	83	239.4	7.748	0.355	Failed to Reject Ho	Not Significant
	CAS	14	311.07				
	CBMA	81	243.69				
	CCS	68	274.65				
	CCJE	26	292.71				
	CA	41	232.72				
	COE	12	257.29				
	CHMT	181	250.78				
Geographical Indication	CTE	83	237.83	7.418	0.387	Failed to Reject Ho	Not Significant
	CAS	14	311.75				
	CBMA	81	255.65				
	CCS	68	258.35				
	CCJE	26	299.42				
	CA	41	227.44				
	COE	12	256.62				
	CHMT	181	252.49				

There is no significant difference in students' level of awareness when grouped according to college except for the utility model. This implies that students from different colleges have the same level of awareness on copyright, patent, trademark, industrial design, and geographical indication but have a different awareness of the utility model. Post hoc analysis using the Conover test determined significant differences in the awareness of students between teacher education and criminal justice education and hospitality management and tourism. Significant differences were also determined between criminal justice education and teacher education, business management and accountancy, and agriculture. Other differences were also determined between business management and accountancy and criminal justice education and hospitality management. Based on the findings, students from criminal justice education are the most aware of the utility model. In addition, significant differences were also determined between hospitality management and tourism and teacher education, and business management and accountancy; students from the hospitality management and tourism are the most aware. However, students from the arts and sciences, computer studies, and engineering have no significant differences from the other colleges in the awareness of the utility model. This means that students from these colleges and students from other colleges have the same level of awareness as presented in table.

The results are congruent with the findings of Igudia et al. (2020) on the perception of undergraduate students on intellectual property. The study also found significant responses from college students regarding their understanding of IP. In total, 237 students from various faculties at UI stated that they understood what intellectual property was all about, whereas 76 students at LCU also expressed this level of understanding. Nevertheless, 25 students from UI and 4 from LCU argued that they were ignorant of the idea of intellectual property. This suggests that a sizable portion of students in the four faculties taken into account at the two universities were aware that they could produce and possess intellectual creations.

Table 3

Level of Students' Awareness as grouped according to different IP rights

Awareness	N	Mean Rank	Computed Value	P-value	Decision	Interpretation
Copyright	506	1706.00	56.882	<0.001	Reject Ho	Significant
Patent	506	1563.42				
Utility	506	1306.78				
Trademarks	506	1544.35				
Industrial Design	506	1513.41				
Geographical Indication	506	1477.03				

Table 3 shows the distribution of the awareness level according to the different IPR. This particularly tests any significant difference on the awareness levels of the students depending on the type of IP. The students level of knowledge and awareness could be attributed to the ones most familiar to them, commonly heard and commonly practiced at the university. With the different colleges' strategies and activities related to IP, the study also expects that students were exposed to various terminologies related to IPR. At .05 level of confidence, the p-value should be lower than or equal to .05 to be significant.

Significant differences were found in the students' level of awareness when grouped according to IPR. Students have different awareness levels in copyright, patent, utility model, trademark, industrial design, and geographical indication. Using the Conover test, awareness levels on copyright were significantly different with patent, utility model, trademark, industrial design, and geographical indication. The patent was significantly different with copyright, utility model,

and geographical indication. The utility model was significantly different with copyright, trademark, industrial design, and geographical indication. The trademark was significantly different from the copyright and utility model. The industrial design was significantly different from copyright and trademark. The geographical indication was significantly different from the copyright, patent, and utility model. These significant differences imply that students are most aware of the copyright as shown in the table.

5. Conclusions

The IPR protects and values the works of its inventors or owners. Thus, this study aims to determine the students' awareness on intellectual property rights in one state university in the Philippines using descriptive research design. There were 506 student-respondents from CCS, CCJE, CTE, CAS, CA, CBMA, CHMT and CoE. The study adapted the survey questionnaire from Amparado and Miro (2020) as the main data gathering tool distributed through Google Forms. The questions were answered using 5-point Likert-type scales.

Results revealed that university students can adequately understand copyrights, patents, trademarks, industrial designs and geographical indications whereas students have less awareness and understanding of the utility model and its aspect. Full awareness on the IPR is vital as there are implications on the protected materials, works and inventions that may lead to infringement for its improper use. Thus, it is recommended that the university design strategies and ways to develop tools such as intellectual property rights manual for wider dissemination and raise awareness of its students. Moreover, increasing the students' awareness level on IPR can also be done through continuous conduct of seminars, conferences, and training programs as this will also benefit the university and its academic community. As the results provide evidence that students from different colleges have the same level of awareness on the different IPR except from utility model, it is the role of the university to take further steps in distinguishing utility model among others. Illustrations on the meaning, purpose and distinctions should be introduced to students to avoid confusions.

Lastly, the students' levels of awareness on IPR were highly significant. Rights can be confusing and misunderstood on the part of the students, hence, it is recommended that the

university should constantly educate and inform the students to become aware not only on the distinctions and how it is being practiced but also its effects in order to prevent infringement.

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Selected Factors Affecting the Subsectors of the Philippine Agriculture: A Panel Regression Analysis

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Abstract

The study examined the effects of exports to Gross Domestic Product (GDP), employment, and production loans granted in the GDP agriculture of the Philippines. This paper employed descriptive and quantitative techniques to analyze the behavior of GDP, production loans granted (PLG), exports to GDP (EGDP), and employment (EMP) from 2005 to 2015 totalling 33 observations of agriculture, forestry, and fishery sectors. Specifically, panel data analysis was used to assess the effects of APLG, EMP, GDP_{t-1} and $AEGDP_{t-1}$ in GDP. The fixed effect model corrected from autocorrelation and heteroscedasticity, a one percentage unit increase in the exports to GDP, on the average, leads to Php 774.96 increase in the GDP, other things equal; and a one-unit increase in employment, on the average, leads to PhP23.55 increase in the GDP, other things equal; a one peso increase in the production loans granted lagged by one period, on the average, leads to Php 0.4760 increase in the GDP, other things equal. Using the fixed effect model, all the explanatory variables such as, exports to GDP, employment and production loans granted lagged by one period exhibited significant effect on the GDP agriculture. Hence, the model is considered satisfactory from statistical perspective. The results from the fixed effect model were consistent with the priori expectations that exports to GDP, employment and production loans granted lagged by one period positively affect the GDP agriculture.

Keywords: *agriculture, GDP, exports, production loans, employment*

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1. Introduction

Agriculture is the art and science of managing plant and animal growth for human use. It includes farming and all its branches such as soil cultivation or tillage, production, planting, and harvesting of all agriculture and horticulture products, rearing of animals and poultry, dairy and practices performed out by the farmer on a farm as an incident to or in conjunction with such farms. It also includes forestry and logging operations but excludes the manufacture or processing of farm products.

The Philippines is generally an agricultural country notwithstanding its attempt to make it an industrialized nation in 2000. According to the Philippine Department of Agriculture (DA), the Philippines is an agriculture country with a land area of 300,000 km2, 47 percent of it is comprised of agricultural land. The key agricultural lands are clustered around large urban areas with high population density. The agricultural sector of the country is divided into farming, fisheries, livestock/poultry, and forestry. The major agriculture crops are coconut, rice, bananas, corn, coffee, sugarcane, pineapple, mangoes, tobacco, and abaca. Based on the World Bank data, the contribution of agriculture in Philippine GDP from 1960 to 2016 has an average value of 21 percent with the lowest of 10 percent in 2016 and the highest of 31 percent in 1974.

The country is also the second largest archipelagic state and one of the largest fishing countries in the world. In 2012, with a production of 3 million tons of fish, mollusks, crustaceans and other marine animals, the Philippines topped the global major fish producing countries. Aquaculture contributed to total fish production by 790 900 tons, or 25.4 percent. Most of its output is locally consumed with a consumption of 33 kg per caput of fish in 2011. Furthermore, in 2012, the Philippines is the third largest farmed seaweed producer with a production of 1.8 million tons. An estimated 1.5 million people were employed by the fisheries and aquaculture industry nationwide in 2010, with fisheries accounting for over 1 million. The fishing industry is contributing an estimated 1.24% (priced at 223 billion pesos) to the current prices of the Gross Domestic Product (GDP), respectively in 2020. Based on Food and Agriculture Organization 2014 report, the fish and fishery products exports were valued at USD 1.2 billion in 2013. Tuna was the top commodity for export, followed by prawns and shrimps.

The forests of the country are exceptional. It is composed of thousands of plants and animals from tree forests of the mountains to mangrove forests of coastal areas. The variety of the forest is rich, it spans from about 1,200 types of mammals, birds, amphibians, and reptiles, while at least 8,900 species of trees, plants, orchids, and shrubs are known. According to the Department of Environment and Natural Resources, at least 46 percent of the fauna and 39 percent of the flora are native. Thirty percent of the Philippine population utilizes the forest and its resources for the livelihood and needs of the people. Forests serve as shield and can pacify the intensity of storm waves. For instance, 100-meter thick mangrove forest can reduce 66 percent of the strength storm waves, thus saving the lives of coastal barangays. Based on the 2020 Philippine Forestry Statistics, the forest cover of the Philippine is around 23.38 percent. The country has lost about 100 thousand square kilometers of forest from 1934 to 1988. The destruction of forests results in several problems such as landslide, flash floods and siltation in water bodies, low fertility of the soil and water quality, and minimal number of watersheds. Forests are also very important during climate change. The planting of trees also reduces atmospheric carbon dioxide and reduces the possibility of climate-related disasters such as storms and drainage.

The government has acknowledged the decreasing contribution of the agricultural sector in the country's GDP, from fourteen percent (14%) GDP share in 2000 to eight percent (8%) GDP share in 2018. This is primarily due to extreme natural disaster, infestation of the pests and lack of high-quality of crops at the end of the harvest. The maximization of land potential is prevented because of limited diversification of agricultural product such as rice, corn, and sugarcane. Issues such as lack of irrigation, limited access to financial institutions, outdated farm machineries and scarce post-harvest facilities, ageing farmers, among others have also been recognized.

With the government's efforts to address the problems of agriculture sector, the Philippine Development Plan 2017-2022 will secure the sustainability of its endeavor to enhance the productivity and continuously build the capacity of its stakeholders. Some of the development plan strategies are to improve productivity within ecological limit, increase agriculture-based enterprises, access to technology, financial inclusion, and ensure and protect land tenure security of agrarian reform beneficiaries.

This study is an attempt to analyze the behavior Philippine agriculture output along with selected exploratory or independent variables such as, exports to GDP, employment, and

production loans granted across the different sectors of agriculture for the period of 2005 to 2015. Specifically, this study finds answers to the following research questions:

1. Is there a significant correlation among exports to GDP ratio, employment, production loans granted, and agricultural output?
2. Do production loans granted, exports to GDP ratio, employment significantly affect the agricultural output, when taken individually and collectively?
3. Is the effect of the explanatory variables mediated by the differences across agricultural subsectors?
4. Do the subsector differences significantly affect the agricultural output?
5. What is the appropriate panel regression model to be used as model for Agricultural Output?

2. Literature review

2.1. Theoretical framework

Production Theory Basics. The main concept of production is to transform the resources into capital goods. Production, storage, shipping, and packaging can be included. Economists broadly describe production as something other than consumption economic activity. Any commercial activity other than the final purchase is considered a form of production. The production process is carried out in time and space. It is a concept of flow that determined by means of output rate per time. The production process covers three aspects: the quantity of the produced commodity, the quality of the produced commodity, and the temporal and spatial distribution of the produced commodity. Any activity which increases the similarity between the demand pattern for products and the quantity, forms and distribution of such goods on the market can be described as a process of production.

Economists refer to the resources or inputs used for the production process as production factors. Various potential inputs are typically grouped into four or five categories such as commodities (natural capital), labor (human capital), capital goods and land. The fifth category that is the managerial and entrepreneurial skills is added considering that it is a subcategory of labor services. Capital goods are those goods that have previously go through a production process. Other authors considered technology as factor of production process. Management can adjust all these factors in the long-term production. However, the short-term production usually consider at

least one factor of production must be permanent. Fixed production factor is a factor whose amount cannot easily change such as large equipment, such as suitable production areas, and key management personnel. Variable production factors are factors whose level of use can be easily changed like consumption of agricultural products, transportation services and most raw materials. In the short-term production, the company's business scope determines how many products can be maximally produced. In the long-term production, there is no limitation in the scale.

Cobb-Douglas Production Theory. The functional form of the Cobb-Douglas production function is often used in the business world to define the relation between output and input. On the advice of Knut Wickel (1851-1926), Charles Cobb and Paul Douglas tested 1928 for statistical evidence.

In 1928, Charles Cobb and Paul Douglas published a report in which they influenced American economic development during the period from 1899 to 1922. They examined a simplistic view of the economy, wherein production efficiency is calculated by the amount of labor involved and the amount of capital invested. While there are several other factors influencing economic growth, their model has shown remarkably accurate. The function Cobb and Douglas used to model production was:

$$P(L, K) = b\, L^{\alpha} K^{\beta}$$

where:

• P is total production (the monetary value of all goods produced in a year)

• L is labor input (the total number of person-hours worked in a year)

• K is capital input (the monetary worth of all machinery, equipment, and buildings)

• b is total factor productivity

• α and β are the output elasticities of labor and capital, respectively. These values are constants dictated by technologies available.

Export-Led Growth Theory. The export-led growth hypothesis (ELGH) assumes that increasing one's country exports results in increasing the growth of the entire economy. Exports can lead as a "growth engine" based on its advocates.

The relationship between growth and export is widely related to the probable effective externalities for the local economy resulting from participation in global markets, e.g. the reallocation of existing capital, economies of scale and other impacts of labor training. These mechanisms, however, are often used without any theoretical support or scientific evidence. A significant number of ELGH research has been carried out in developing countries (DCs) over the last 30 years. In fact, a new series of scientific studies on a number of different research lines, methodologies, time periods and countries were conducted during the 1990s (Smith, 2001).

Agriculture-based economic development is an agricultural-based economic development strategy that involves a shift in technological, institutional and financial incentives change that will increase small farmers' productivity. Wiggins (2006) explained that in the process of economic growth, agricultural financial incentives play a dual role. First, it will provide more food and create many great jobs that are needed as well. The theory targets the methods by which underdeveloped countries can turn their domestic economic systems from a heavy focus on traditional livelihood farming to a more current and advanced farming practice through significant financial support to achieve an industrial breakthrough (Igyo, 2016).

2.2. The Importance of Exports and Labor Productivity in Agriculture

China is the world's most populated nation and also a country with numerous farmers. According to 2005 World Bank data, forty-five percent of total employment is in agriculture. In 2005, 59.49 percent of rural labor force of China was engaged in agriculture and the rest in other sectors. But through times, labor force became smaller and smaller in agriculture. Chinese economy continues to change since 1978; the government employs laws and policies that could bring back China's economy back to life. The changes made impact on food supply for the Chinese market. China's exports of agricultural products are mainly vegetables, fruits and aquatic products. In 2001, China became a member of World Trade Organization (WTO), which signifies that the country is fully involved in economic globalization and its agriculture has become part of the globalization process.

The economic crisis will affect the U.S. agriculture directly and indirectly. Changes in U.S. economy will cause a direct effect. On the other hand, the intensity of crisis impacts foreign revenue and trade and global energy prices will result to indirect effects. The growth of the dollar for declining world GDP will significantly reduce import and agricultural work and reduce export

and agricultural prices. The main element of uncertainty in the long term is the exchange rate of the dollar, especially in relation to the Chinese yuan. The dollar can still be measured or depreciated. In the latter case, the return of global growth combined with valuable dollars would create a strong foreign demand for United States agricultural products.

The importance of the link between sustainable development and agricultural exports is much depicted in growing economies. Agriculture serves as a significant driver for economic development mostly for developing countries. Countries like Thailand, Pakistan, China and Brazil experienced a high capital for production but gains low income because of the degradation of resources and low prices of small farmer. It is clear that fair trade export scheme can be an essential tool to make exports a benefit to local communities (Fan et.al, 2013).

According to Al Hamwi (2005), Syria sees the potential of export trade improve their GDP by means of raising the export earnings. Their product seeks to develop competitiveness in the world market. The government uses policies such as anti-export distortions and restrictions on imports in order to satisfy its agricultural products. The effect of these policies has been hampered before the state interference in price, trade, and foreign exchange controls, thus reducing exports of some commodities, banning other exports and export taxation. Now that their economic reform has been carried out, agricultural policies such as exemption of taxes in exported agricultural product, elimination of connection between the imports and exports, reduction of aerial transportation for exports, used machinery classifications, sorting and packing have been allowed to be imported, and an exchange rate has been unified.

According to Umar (2010), agriculture is Nigeria’s largest economic activity. The estimated 70 percent of the total workforce is involved in agriculture. While the oil sector is primarily responsible for the growth and development of the Nigerian economy, agriculture is still a main source of economic sustainability. Nigeria accepts substantial amounts of natural rubber and cocoa exports. However, large export income variations raised concerns over the potential to grow and sustain the country's future.

Other policies like tariffs that maintain high domestic prices and high domestic support interrelate export subsides. These measures can result in overproduction or export subsidies on the world markets with adverse effects on non-subsidiary producer countries. These countries could impose high tariffs in order to protect their producers from cheap subsidized imports. Therefore, a

revision of internal policy and the reduction of import tariffs could go hand in hand with eliminating export subsidies. Developing countries would benefit from liberalizing their own markets to abolish export subsidies without costly changes (Peters, 2006).

According to Ellis (2008), the main dependence on the agriculture is still on weather. Climate change in numerous parts of the world has already had a detrimental effect on agriculture due to growing weather conditions. The Food and Agriculture Organization (FAO) released a caution that a sudden rise in global average temperature of two to four degrees Celsius over pre-industrial levels is enough to diminish the crop yield of Africa and Western Asia by 15-35 percent, and 25-35 percent in the Middle East. The study concludes that there is no concrete, long-term solution for this problem that is published in the existing literature on agriculture, trade and climate change. The rising demand for energy-intensive food also increases the volume of agricultural commodities in international market. How the greenhouse gas emissions from processes like transport and packaging decreases related to trade must be continually emphasized. Governments and policymakers need to focus emphasizing attention to direct and indirect discharges from export-oriented farming, such as production, packaging, transport and storage methods.

Agricultural activities are seen lower for the past decade but still contribute to the economy since bulk of its labor force which compromise 37 percent comes from agriculture. Agricultural exports posted substantial growth in 2000-2005, with geographical growth of 48 percent, while fishery exports grew in East Asia by 12 percent overwhelming even non-farm export growth of 75 percent. These strong contrasts represent the main source of growth in the respective export industries: it's East Asia for fishing and non-agricultural exports; other parts of the world are for agriculture. It is their main destination, with 26 percent of all Filipino agricultural and fish exports absorbed by East Asian markets. The US accommodates 22 percent, although locally far away, followed by the European Union (Liao & Pasadilla, 2006).

Coconut farming is the main source of livelihood in the Philippines. Coconut products as the highest yielding export play a very important role in increasing the agricultural output. It produces jobs to many rural areas which land are cultivated for coconut industry. But some cases showed that coconut farming benefits decline due to some instances like long period of cropping of coconut trees, no sustain irrigation and others. The WESMIARC or Western Mindanao Integrated Agricultural Research Center (2005) conducted a study to identify suitable and sustainable technologies that will improve the productivity and income from coconut farming. The

result has shown that space scarcity is not always equal to a limited productivity. Even small-scale farmers could produce more if their farming systems are appropriate and well adapted to the area. By optimizing the use of every area on the land of the farmer, the total farm productivity can be achieved.

With the enactment of the Agriculture and Fisheries Modernization Act (AFMA) in 1997, the agricultural sector in the Philippines was steadily modernizing and at the center of the country's economy – with a contribution of 25 percent to the Gross Domestic Product and employing 50 percent of the working population. However, the industry as a whole, continues to exist as units of small farms that operate individually, most of which grow fruit and vegetables for own consumption or as substitute source of small-time income.

The production of livestock is an important contributor to the gross domestic product in many developing countries. Agro-forestry practices mainly focusing on trees, forages and cattle are known as Silvopasture. Forages are deliberately introduced into wood production systems or trees are deliberately placed into a drilling system is the process of silvopasture systems. Through the interactions between timber, drilling and livestock, wood, high quality drilling resources and effective livestock production can be produced at the same moment. Silvopasture can generate overall economic returns and create a sustainable system that delivers many benefits for the environment. These systems range from traditional silvopastoral to fodder cuts and systems of very high intensity.

Macabasco (2004) surveyed the state of the Philippine Fruit Industry. It argued that fruits are major dollar earners and major sources of employment in the Philippine economy. Fruit production grew by 3.6 percent from 1998-2002, which was mainly driven by the 6.5 percent increase of banana production during the same time frame. Banana accounts for 60 percent of total fruit volume during the past five years (1999-2004), while pineapple and mango account for 20 percent and 10 percent of fruit production, respectively. As such, these three crops account for 90 percent of the total fruit production of the country. With regard to trade, Macabasco stated that fresh and processed fruits reached over $600 million (FOB) yearly from 1998-2002. The country also exports papayas, jackfruit, lanzones and calamansi and the major destination for these fruits is Japan, accounting for over 40 percent of the total value of fresh/dried fruit exports in 2003. The other markets are China, U.S.A., South Korea, U.A.E., and Taiwan.

Lastly, Macabasco (2004) also analyzed the strengths, weaknesses, opportunities, and threats to the Philippine fruit industry. It argued that the fruit industry continues to suffer due to untapped potentials. The main constraints remain to be limited application of recommended production technologies and low productivity, inefficient marketing infrastructures, lack of long-term financing and largely unorganized producers. The main advantage is agro-climactic endowment and pockets of global excellence. The argument therefore shows the need for increased government assistance to be able to help exporters overcome the said constraints. As such, Macabasco concludes that the Philippine fruit industry must ensure the production of high quality products to remain competitive in the world markets. This high-quality production and competitiveness are based on three key factors: production, technology, and management.

The study of Habito et al. (2005) reviewed the trends in the Philippine agricultural sector's performance, and relate it to the policy environment within which the sector has operated through the years. It specifically examines the trends in production and productivity of the sector and how was it influence by the policies created. The results show that Philippine agricultural sector deteriorated over time compared to its neighboring countries.

2.3. The Role of Financial Markets to Agriculture Output

Akram et al. (2008) defined the constraints and proposed remedial steps that would allow efficient use of agricultural credit schemes. Most farmers reported that due to the need for collateral, they could not use credit. The rough hits were tenants and shareholders who do not own the property and were therefore unable to take advantage of credit. Another constraint was the high mark up from both formal and informal sources. The respondents' borrowing behavior was estimated using the logit model and the determinants of credit constraints were identified. Results showed that the transitory income, educational level, and forecast interest rate coefficients have significant impacts on borrowing behaviour. The expenditure on household consumption was determined positively and significantly by operating holdings and equipment value.

Onyishi et al. (2015) found a negative relationship of agricultural credit support scheme and large scale agricultural credit scheme in agricultural sector effect to gross domestic product of Nigeria. While the credit schemes are relevant to the intervention on the agricultural sector by the Nigerian government, they may not have been funded adequately enough to have any effect on agricultural funding.

Nawaz (2011) studied and investigated the role of credit to Pakistan's agriculture sector. The study showed a highly significant long-term crop area coefficient since the land is a fundamental input to the agricultural sector. The study also showed that the proportion of soil intensity increases the sector output. Scientific results show that direct credit has a positive relationship with agricultural output. Credit always helps purchase various inputs from this sector, so it has an indirect role to play.

3. Methodology

3.1. Statistical Treatment of Data

3.1.1. Measure of Correlation

The Pearson Correlation Coefficient (r) is employed with the following formula to calculate the correlation between variables (Walpole et al. 2007, 434):

$$r = \frac{S_{xy}}{\sqrt{S_{xx}S_{yy}}}$$

The value of r close to one implies very strong correlation or degree of linear association between X and Y, while values close to zero indicate little or no correlation, ceteris paribus.

3.1.2. Measure of Regression

The research utilized three (3) panel regression techniques to analyze the behavior of GDP. The following model was utilized in the study:

$$GDP_{it} = \beta_o + \Sigma\beta_1 EGDP_{it} + \Sigma\beta_2 EMP i_t + \Sigma\beta_3 GDP_{it-1} + \Sigma\beta_4 PLG_{it-1} + \mu_{it} \quad (Eq.1)$$

where:

GDP = GDP of i^{th} agriculture sector at *t* year.

EGDP = Exports to GDP of i^{th} agriculture sector at *t* year.

EMP = Employment of i^{th} agriculture sector at *t* year.

PLG = Production Loans Granted of i^{th} agriculture sector at *t-1* year.

GDP = GDP of i^{th} agriculture sector at *t-1* year.

3.1.3. Tests on Panel Regression Model:

a. Stationarity Test

The Levin-Lin-Chu (LCC) Test procedure – which assumes a common unit root process – is used to test for stationarity of the data and the existence of panel unit root with null hypothesis that each time series contains a unit root against the alternative hypothesis that each time series is stationary (Kunst, Nell & Zimmermann 2011, 1).

Where the lag order p is permitted to vary across individuals (The null hypothesis is p = 0). The procedure work first by running augment Dickey-Fuller (ADF) for each cross-section on the equation (2):

$$\Delta y_{it} = (p_i - 1)y_{it-1} + \sum_{L=1}^{pi} \Delta y_{it-L} + \delta_{mi} d_{mt} + v_{it}, \quad m = 1, 2, 3$$

The second step is taken for the two auxiliary regressions (2):

$\Delta yit\ on\ \Delta yit{-}L\ and\ dmt\ to\ obtain\ the\ residuals\ \hat{e}ei$

$yit{-}L\ on\ \Delta yit{-}L\ and\ dmt\ to\ get\ residuals\ \hat{v}it{-}1$

The residuals are then standardized with the following procedures (3):

$$\bar{e}_{ei} = {}^{\hat{e}_{ei}}/_{\hat{\sigma}_{ei}}$$

$$\bar{v}_{it-1} = {}^{\hat{v}_{it-1}}/_{\hat{\sigma}_{ei}}$$

Finally, run the OLS pooled regression:

$$\bar{e}ei = p\bar{v}it{-}1 + \bar{\varepsilon}it$$

If $|\boldsymbol{pi}|<\mathbf{1}$, $\bar{\boldsymbol{e}}\boldsymbol{ei}$ is said to be weakly (trend-) stationary, while if $|\boldsymbol{pi}|=\mathbf{1}$ then $\bar{\boldsymbol{e}}\boldsymbol{ei}$ contains a unit root.

b. Pooled Least Squares

The estimation of the model depends on the assumption of the researcher who makes on the intercept, the slope coefficients and the error term (Gujarati 2004, 640). The following are the

assumed Fixed Effect Model (FEM) and Random Effect Model (REM) that were applied in this study.

Fixed Effect (Cross-section) or Least Squares Dummy Variable Model (LSDV)

Employing the fixed effect model, which allows the slopes to vary across the classification of the sectors of agriculture, the differential slope dummies were added to the model as follows:

$$GDP_{it}=\beta_o+\Sigma\beta_1 EGDP_{it}+\Sigma\beta_2 EMPi_t+\Sigma\beta_3 GDP_{it-1}+\Sigma\beta_4 PLG_{it-1}+\Sigma\lambda_{it}D_{it}+ \quad (Eq.2)$$

Random Effect (Cross-section) Model

The REM allows the slopes of the models as random variable with mean value of βi for the first model and αj, where i = 1, 2, 3 and j = 1, 2.

$$GDP_{it}= \beta_o+ \Sigma\beta_1 EGDP_{it} + \Sigma\beta_2 EMPi_t+\Sigma\beta_3 GDP_{it-1}+\Sigma\beta_4 PLG_{it-1}+\mu_{it} \quad (Eq.3)$$

c. Test for individual Significance

To test for individual statistical significance of exogenous variables, the t-test is used with the following the formula:

$$t_n = \frac{\hat{\beta}_i - \beta_i}{se\ \hat{\beta}_i}$$

If the computed t-statistic exceeds the tabular t value, or critical region at $\alpha = 0.05$, the null hypothesis that $\beta i=0$ is rejected. Alternatively, if the p- value of the computed value is less than the chosen level of significance, the null hypothesis is rejected. iv. Test for Overall Significance To test for the overall significance of the regression model, the F-test is used. It tests the overall explanatory power of the parameters using the following formula:

$$F_{k-1,n-k} = \frac{R^2/(k-1)}{(1-R^2)/(n-k)}$$

If the value of the F-statistics exceeds the critical value of the distribution at 5 percent level of significance with k-1 and n-k degrees of freedom, it can be inferred that not all of the regression coefficients are not equal to zero and thus the regression estimate is significant and the model is to be considered valid (Gujarati, 2004). v. Measure of Multiple Determination to test how well the

sample regression line fits the data, the coefficient of regression, R2, is employed with formulas as follows:

$$R^2 = 1 - \frac{\sum {e_i}^2}{\sum {y_i}^2}$$

However, the adjusted coefficient of determination, $\overline{R2}$, was used to penalize for the reduction in degrees of freedom as the number of injected independent variables in the regression increase.

$$\overline{R^2} = 1 - (1 - R^2)\frac{n-1}{n-k}$$

d. Durbin Watson Test to Autocorrelation

To check for the presence of autocorrelation or the assumption that the error terms are not correlated, the Durbin-Watson statistic, d, is used with the following formula:

$$d = \frac{\sum_{t=2}^{n}(e_t - e_{t-1})^2}{\sum_{t=1}^{n} {e_t}^2}$$

The calculated value of d ranges between 0 and 4, with no autocorrelation when d is in the neighborhood of 2. If the computed d-statistics is greater than the upper limit of d (du) but less than 4-du (i.e., du < d < 4-du), there will be no evidence of positive or negative autocorrelation (Gujarati, 2004).

e. Test for Homoscedasticity

To determine the assumption of Homoscedasticity, that is, the error terms in the regression model is of equal variances, the study utilizes the Breusch-Pagan Test.

4. Findings and Discussions

The results from Pearson correlation tests indicate that the Gross Domestic Product (GDP) have significant and strong positive linear relationship with the all the variables production loans granted (PLG), exports to GDP ratio (EGDP), and employment (EMP). Given each p-value of 0.0000, which is below the five percent level of significance and thus, REJECT the null hypothesis that these independent variables have no significant correlation with the GDP.

Table 1

Pearson Correlation Tests

	PLG	EGDP	EMP
GDP	0.9402	0.972	0.9901
Sig. (2 tailed)	0	0	0
N	33	33	33

Panel unit root tests using Levin, Len and Chu Statistic (LLC) method were conducted on stacked series. The results in Table 6 showed that GDP and Production Loans Granted are non-stochastic at their levels. The Exports to GDP is non-stochastic at its first difference while the Employment is non-stochastic at second difference.

Table 2

Panel Unit Root Tests

Variables	Level		1st Difference		2nd difference	
	Levin, Lin & Chu	Prob	Levin, Lin & Chu	Prob	Levin, Lin & Chu	Prob
GDP	-2.5144	0.006	-3.3093	0.0005	-5.5497	0
PLG	-10.327	0	-10.54	0	-4.2743	0
EGDP	-0.9513	0.1707	-2.146	0.0159	-4.2742	0
EMP	3.0787	0.999	-1.3992	0.0809	-9.6239	0

The adjusted R-squared value of 0.9995 in the initial pooled model means that 99.95 percent of the variation in the GDP is explained by Exports to GDP (EGDP), employment (EMP), production loans granted (PLG) lagged by one period and GDP lagged by one period taking into account the number of explanatory variables used in the model.

Table 3

Initial Pooled Regression Model

GDP =	-189.9296	+2240.405 EGDP	+1.8500 EMP	+0.9595 $GDP_{(t-1)}$	-0.2336 $PLG_{(t-1)}$
t-value	-0.1201	3.5053	1.2387	29.8963	-3.4538
p-value	0.9053	0.0017	0.227	0.0000	0.0020

R-squared = 0.9996 F-statistic =15275.67

Adjusted R^2= 0.9995 DW statistics =1.500727

Critical Values:

5% Critical t-value = 2.045 DW du = 1.739

5% Critical F-value = 2.93 4-du = 2.21

As expected, all explanatory variables have positive coefficients except for production loans granted (PLG) lagged by one period. The negative coefficient is in line with related literature of the effect of payments and costs of borrowing in the GDP. The null hypothesis for Exports to GDP, GDP lagged by one period and for production loans granted (PLG) lagged by one period variables was rejected at 0.0017, 0.0000, and 0.020 probability, respectively. However, there is presence of positive autocorrelation. The DW statistic of 1.501 falls below 1.739 du < dw < 2.21 4-du.

Table 4

Pooled Regression Model (Corrected from Autocorrelation)

GDP =	-642.7245	+2067.805 EGDP	+2.245692 EMP	+0.9549 $GDP_{(t-1)}$	-0.2172 $PLG_{(t-1)}$
t-value	-0.2775	3.3489	1.0213	20.7961	-2.8145
p-value	0.7841	0.003	0.3187	0.0000	0.0104
R-squared = 0.9996			F-statistic =10949.69		
Adjusted R^2= 0.9995			DW statistics =1.9631		
AR(1)= 0.271194		t-value = 1.2322	p-value = 0.2315		
Critical Values:					
5% Critical t-value = 2.045			DW du = 1.861		
5% Critical F-value = 2.93			4-du = 2.139		

The second pooled model in table 4 corrected the presence of autocorrelation at first order. The adjusted R-squared value of the second model at 0.9995 means that 99.95 percent in the variations of GDP is explained by exports to GDP (EGDP), employment (EMP), production loans granted (PLG) lagged by one period and GDP lagged by one period taking into account the number of explanatory variables. The computed adjusted R-squared is the same with the initial pooled model in table 3 at 99.95 percent.

Consistent with the results in initial pooled model, the coefficients exports to GDP (EGDP), employment (EMP) and GDP lagged by one period are positive while the production loans granted (PLG) lagged by one period is negative. Except for employment, all the independent variables are at five (5) percent level of significance.

The F-test also indicated that all the variables are jointly significant in the model at five 5 percent level. The f-statistic of 10949.69 value exceeds the critical value of 2.93. The results also showed normal distribution of residuals in this model as per Jarque-Bera statistic 2.1309 exceeded the 5 percent level of significance (Appendix 5.1). The DW statistic of 1.963 is now within the

region of 1.861 du < DW < 2.139 4-du indicating no presence of autocorrelation at first order (Table 4).

Table 5

Initial Fixed Effect Model Result

GDP =	1211178	+2374.328 EGDP	-2.3361 EMP	+0.7787 $GDP_{(t-1)}$	-0.1044 $PLG_{(t-1)}$
t-value	1.2581	3.6747	-0.3081	1.1966	-0.997
p-value	0.2209	0.0013	0.7608	0.0000	0.3291

DFORESTRY = -120684.9 t-value= -1.2659 p-value= 0.2182
DFISHERY = -92858.85 t-value= -1.1695 p-value= 0.2542

R-squared = 0.9996 F-statistic = 10632.88
Adjusted R^2= 0.9995 DW statistics =1.7474

Critical Values:
5% Critical t-value = 2.045 DW du = 1.931
5% Critical F-value = 2.93 4-du = 2.069

The next model is the Fixed Effect model that incorporated dummy variables for each subsector. The exports to GDP (EGDP) and GDP lagged by one period are at 5 percent level of significance. The dummy variables for forestry and fishery are not significant, meaning there is no variation between the subsectors of agriculture. The DW statistic of 1.747 indicates a presence of positive autocorrelation which falls 1.931cdu < DW < 2.069 4-du.

Table 6

Fixed Effect Model Result (Corrected from Autocorrelation and Heteroscedasticity)

GDP =	-70995.64	+774.9641 EGDP	23.5508 EMP	+0.5531 $GDP_{(t-1)}$	+0.4760 $PLG_{(t-1)}$
t-value	-0.644	2.1317	2.8121	4.6176	3.8301
p-value	0.5546	0.0500	0.0131	0.0003	0.0016

DFORESTRY = 69543.95 t-value= 0.5983 p-value= 0.5586
DFISHERY = 91357.96 t-value= 0.9379 p-value= 0.3632
AR(1)= 0.6255 t-value= 7.2117 p-value= 0.0000
AR(2)= -0.5292 t-value= 7.2118 p-value= 0.0001

R-squared = 0.999912 F-statistic = 21301.16
Adjusted R^2= 0.999865 DW statistic =2.2258

Critical Values:
5% Critical t-value = 2.045 DW du = 2.318
5% Critical F-value = 2.93 4-du = 1.682

The model in Table 6 is corrected for the presence of both autocorrelation and cross-section heteroscedasticity. The Fixed Effect model with dummy variables for the agricultural subsectors that the model explains 99.99 percent of all the variations in the dependent variable GDP.

The variables export to GDP (EGDP), employment (EMP), GDP lagged by one period and production loans granted (PLG) lagged by one period are now significant at 5 percent. The production loans granted (PLG) lagged by one period turns out to positive incorporating the dummy variables of forestry and fishery. The positive coefficient is line with the theory of agriculture-based economic development. Consistent with the initial fixed effect model, the dummy variables of forestry and fishery are not significant.

The F-statistic of 21301 exceeded its critical f-value 2.93, rejecting the null hypothesis that the regressors in the model are not jointly significant at five percent level. The DW statistic of 2.2258 falls within the 2.31 du > DW >1.682 4-du, accepting the null hypothesis of no autocorrelation (Table 6).

The Wald test has a 577.06 F-statistic and a probability of less than 5 percent, thus concluding the Fixed Effect model is the appropriate model than the Pooled Regression.

Table 7

Wald Test Coefficient Restriction

Equation: EQ_FIXED_AR1AR2

Test Statistic	Value	df	Probability
F-statistic	16995.20	(8, 15)	0.0000
Chi-square	135961.6	8	0.0000

The Random Effects estimation requires number of cross sections, number of coefficients for between estimators of estimate of RE innovation variance. Random effects model cannot establish small sample properties for the RE estimator. The RE estimator is consistent and asymptotically normally distributed under linearity, independence, strict exogeneity, and error variance when the number of individuals $N \rightarrow \infty$ even if T is fixed (Schmidheiny, 2018). The panel data did not meet the requirement for Random Effects.

In relation to the fixed effect model, pooled regression is a restrictive model in that it imposes a common intercept on all regions. Therefore, restricted F-test is used. The F-value is:

$$F = \frac{R^2{}_{UR} - R^2{}_{R}/\ m}{(1 - R^2{}_{UR})/(n-k)} = \frac{(0.999912 - 0.999617)/3}{(1 - 0.999912)/(33-5)}$$

$$= 31.28$$

The F-value of 31.28 exceeds the critical F-value of 2.93 at five (5) percent level is highly significant. Therefore, the restricted regressor is invalid. Specifically, fixed effect model is better than the pooled regression model.

5. Conclusion

In the final pooled regression model, the positive sign preceding the coefficients of exports to GDP, employment and GDP lagged by one period, indicate a positive relationship with the dependent variable GDP except for production loans granted which resulted a negative relationship. This relationship is in accordance with the theoretical framework and literature discussed in this study.

The results from the unit root test on panel data using the Levin, Lin and Chu procedure suggested that the variable GDP and production loans granted are stationary at level, the export to GDP ratio is stationary at first difference and the employment at its second difference. All of the explanatory variables have strong positive correlation with dependent variable, GDP.

Based on the fixed effect model corrected from autocorrelation and heteroscedasticity, a one percentage unit increase in the exports to GDP, on the average, leads to Php 774.96 increase in the GDP, other things equal. A one-unit increase in employment, on the average, leads to PhP23.55 increase in the GDP, other things equal. Lastly, one-peso increase in the production loans granted lagged by one period, on the average, leads to Php 0.4760 increase in the GDP, other things equal.

Using the fixed effect model, all the explanatory variables such as, exports to GDP, employment, GDP lagged by one period, and production loans granted lagged by one period exerted significant effect on the GDP agriculture. Hence, the model is considered satisfactory from statistical perspective.

The results from the fixed effect model were consistent with the prior expectations that exports to GDP, employment and production loans granted lagged by one period positively affect the GDP agriculture.

The result from the effects of exports to GDP, employment and production loans granted lagged by one period are positive, hence, the following recommendations are suggested:

1. Policy options such as reducing cost of borrowing to small farmer, effective crop insurance program with immediate claim, effective guarantee program for smallholder financing, and easing access to financial intermediaries for the farmers are essentials to increase the agricultural output.
2. The private sector plays an important role in agriculture. Increase responsible and productive investments in agriculture and enhance competence in the supply chain. Expand entrepreneurship to create an employment and stable local agribusinesses.
3. Increase investment in forestry by creating market for forest services. Developing plantations that will facilitate the legal harvesting of forest products for household and industry consumption.
4. Locally mobilizing investment funds is very important in meeting at least part of the investment needs of the future. And to attract participation from the private sector, it is necessary to make available investment profiles of appropriate projects with relevant information and analysis.
5. As there is a potential for Philippine agriculture products and the global price becomes competitive, it is recommended for the government to support export activities for farmers. An increase in access to international markets, improved participation in global value chain and addressing prospects for a regional trade are relevant moves.

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Organizational Dynamics and Stewardship in Promoting Innovative Work Behavior and Commitment at Work

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Abstract

The study determined the relationship between organizational dynamics and stewardship in promoting innovative work behavior and commitment at work. The descriptive-correlational research design was used, and statistical tools such as Pearson r correlational analysis were utilized to test the relationship between the independent and dependent variables. The hypotheses testing revealed significant relationship between teachers' innovative work behavior and principals' organizational dynamics and stewardship. In addition, there is significant relationship between teachers' work commitment and principals' organizational dynamics and stewardship. Furthermore, organizational dynamics is highly practiced in schools in terms of cognitive, social, personal, and technological imperative. Similarly, stewardship in the organization regarding relational, contextual, and motivational support is highly manifested by the respondents. The work commitment regarding job involvement, work ethic, and commitment to profession/career is also highly practiced. Based on the findings, the school organizations may organize a training, seminar and team-building activities that promotes camaraderie among colleagues.

Keywords: *organizational dynamics, stewardship, innovative work behavior, work commitment*

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1. Introduction

An organization is a social group formed by a group of individuals to perform a specific purpose or objective. From a sociological standpoint, the educational system is an administrative organization that encapsulates a variety of elements and influences (Gitman et al., 2018). In terms of procedure, organization, structure, and functional dimensions, all types of innovations and societal changes directly impact education and school. As an educational institution, the school ensures that students learn knowledge, skills, and attitudes consistent with the educational system's goals and ideals. The principal, teachers and students' roles, authority relationships, and school discipline are relevant in this setting (Turkkahraman, 2015).

According to Republic Act 9155 or the Basic Education Act of 2001, the school leaders are regarded as the managers of the schools who are held liable and accountable for the school's entire operations. These individuals are empowered to make decisions about the school's operations in conjunction with internal and external stakeholders, create a learning environment within the school, and administrate or manage the school's personnel, physical, and resources. Every organization, including schools, expects management to provide outcomes. Thus, school leaders can manage depending on their abilities, skills, attitudes, behavior, and leadership style.

School leaders are expected to be leaders and managers. As leaders, they are expected to influence the performance of teams, groups, and organizations while being a manager they turn information and knowledge into action (Kamble et al., 2011). A school principal's administrative leadership is crucial and required to manage education effectively and efficiently in schools to provide the high-quality education that all parties expect. As a manager, the school principal must be able to conduct managerial duties such as planning, coordinating, and managing actuating activities (Tobin, 2014). They are the highest office in a school organization, and play an essential role in the development of the school as an institution (Fitriati et al., 2014).

Changes in the educational system enable school leaders to seek out more successful organizational behaviors and use various leadership mentoring techniques. These leadership types influence the teacher's feeling of motivation and other emerging behaviors. The management or leadership styles of a principal may have a significant impact on a teacher's experience at the school and are frequently noted as a source of dissatisfaction. Educational leaders have a critical job in influencing teacher conduct and building a thriving academic environment, essential to

teacher motivation and student academic progress. Examining teachers' views of principles and professional demands can help schools adjust to stricter and demanding performance standards.

Leadership plays a vital part in the diverse and complex structures in schools in the Philippines. School heads as leaders establish the working environment, allocate resources, and impact employees' innovative work behaviors by regulating, motivating, and inspiring them, which has been demonstrated to be a critical factor in innovative work behavior. The present COVID-19 epidemic may emphasize the necessity of leadership, as employees who are compelled to work virtually may not know how to act and require help to adjust to their new work environment. During a crisis, organizational leadership and stewardship are put to the test.

This paper serves as a public proclamation of what school leaders must know, understand, and do, in whatever circumstances, to be successful in their roles. Managing school operations and resources, focusing on teaching and learning, building relationships, and improving oneself and others are some examples. As such, this study aimed to determine the relationship between organizational dynamics, stewardship, innovative work behavior, and commitment at work among teachers in public elementary schools. Specifically, this study sought to determine the extent organizational dynamics is imperatively practiced in schools in terms of cognitive, social, personal, and technological, manifestation of stewardship in an organization with regards to relational, contextual, and motivational support, innovative work behaviors of teacher-respondents as to their idea generation, idea promotion, and idea realization and work commitment with regards to job involvement, work ethics, and commitment to profession/career. This study also tested the following hypotheses:

HO1: There is no significant relationship between organizational dynamics and teachers' innovative work behavior and work commitment.

HO2: There is no significant relationship between stewardship and teachers' innovative work behavior and work commitment.

2. Literature review

2.1. Organizational Dynamics

According to Von Fischer and De Jong (2017), leadership significantly impacts an organization's atmosphere and operation. Antonakis and Day (2017) explains that leadership is reliant on the traits and behaviors of the leaders, which include integrity, honesty, the ability to

communicate with empathy, and the desire to manage, all of which necessitate effort, time, energy, and long hours of dedicated work. Moreover, there is considerable evidence in the literature that there is a link between quality leadership and organizational effectiveness. The school environment, clarity in school mission and goals, teacher attitudes, classroom routines and practices, instruction and curricular organization, and students' ability to access education are all areas that are strongly linked to school leadership.

Today's school leaders aspire to advance their professional development in areas where they are under-represented. The study of Beauchamp (2021) looked into how independent school administrators saw their leadership growth. The administrators believe that a structured mentor program could help them enhance their leadership skills, especially if it is tailored to the organization's needs. Similarly, Ylimaki (2012) conducted observations and interviews with administrators, teachers, parents, and students to better understand how recent conservative cultural-political developments affect curricular leadership. The findings illustrate the principal's role as the leading pedagogical decision-maker in a school and the growing interest in curricular leadership.

2.2. Stewardship

According to Macias (2020), leader recognizes leading as secondary to serving. As a servant leader, he has a natural feeling that one wants to serve first. There are ten critical components that are integral to servant leadership: commitment to the growth of other people, healing, awareness, persuasion, empathy, listening, stewardship, building community, foresight, and conceptualization.

Korn (2016) explained that the old idea of servant leadership and the newer stewardship model have a lot in common. Both reject the emphasis of agency theory on power and control. Both necessitate a focus on others. Servant leaders enable others to attain team and organizational goals. Stewardship is an important part of servant leadership since it focuses on the trust that has formed as the organization's lifeblood (VanBenschoten, 2020). The study of Zeng and Xu (2020) suggest that servant leadership is related to increased innovative behavior due to its positive influence on teachers' self-concept. It highlights the importance of developing a favorable supervisor-subordinate relationship.

2.3. Innovative Work Behavior

Innovative Work Behavior is seen as a crucial factor in improving educational quality by school administrators. The central concept is that motivating teachers bring out their creative tendencies and help them grow professionally. It is a process that consists of three stages. The intention to produce ideas is seen in the first stage. The concepts are promoted in the second stage. The idea is accomplished at the final step. This process-based IWB definition is intended to occur while executing a work role or in a workgroup or organization to benefit the role's performance, the group's performance, or the organization's performance. (Johari, 2021)

Nellitawati (2018) expanded on the function of school principals, stating that as innovators, they are significant change agents in the company, guiding the workforce to complete high-quality tasks. According to other studies, school principals should not only supply innovative, creative, and insightful intellectualization to actualize the school's vision and goal, but they should also carry out their duties to the best of their abilities.

2.4. Work Commitment

According to Redmond (2016), commitment is a multi-faceted and complex concept that can take many different forms. The relative importance of work and oneself has been defined as a work commitment. A person's commitment to a work ethic, career/profession commitment, and job involvement are all considered work commitments. Individuals can experience a strong sense of loyalty to a company, its top management, supervisors, or a specific work group. Keskes et al. (2018) assert that transformational leadership is linked to organizational commitment because it allows subordinates to create relationships with their leaders. It also encourages the formation of emotional bonds with leaders, which in turn leads to the impression by subordinates of a sense of responsibility to the company.

The sudy of Kawiana et al. (2021) confirmed the influence of leadership and psychological climate on organizational commitment. The findings revealed that, in the digital age, the administration has a favorable impact on corporate dedication, psychological environment, and, ultimately, organizational commitment in the long run. Similarly, Thien et al. (2021) examined the relationship between instructional leadership and the dimensions of teacher commitment. The findings demonstrated that instructional leadership has a significant and direct association with

teacher commitment to school, students, and teaching, except for the dimension of teacher commitment to the profession.

2.5. Theoretical framework

The study was anchored on organizational leadership performance imperatives of Zaccaro and Klimoski (2002), stewardship behavior in an organization as explained by Hernandez (2008), innovative work behavior of Jannsen (2000), and work commitment by Palmer (2020). In this study, the organizational dynamics and stewardship were chosen to investigate their association with teachers' innovative work behavior and work commitment.

According to Zaccaro and Klimoski (2002), organizational leadership involves acts and proximal consequences (such as worker commitment) that contribute to the event and realization of organizational purpose. They emphasized that leader's influence is rooted in cognitive, social, personal and technological processes. The cognitive imperative refers to the complicated information processing and problem-solving challenges that organizational leaders must face, social imperative exemplifies the behavioral complexity demanded of corporate leaders, personal imperative refers to leaders' responsibility to perform activities such as career and reputation management and power acquisition in a timely and skillful way and technological imperative identifies organizational leaders who use technology to transform their working environments.

In terms of stewardship, Hernandez (2008) affirmed stewardship as attitudes and actions that prioritize the long-term interests of a community over personal aims that promote an individual's self-interests. It occurs to the extent that organizational leaders accept personal accountability for the consequences of their actions on stakeholders' wellbeing. There are three kinds of support created by leadership behaviors – relational, contextual, and motivational support that affect the stewardship behavior of followers. Relational support establishes a positive relationship between the principal and teachers, helping the principal establish a reputation for reliability. Contextual support fosters clarity of vision and a sense of coherence and coordination among governance structures, policies, and processes. An internal and active orientation to an individual's job function is generated via motivational support rather than an external and passive orientation. It instills in the participants a sense of intrinsic task drive, which shows their trust in their abilities.

According to Jannsen (2000), innovative work behavior consists of three behavioral tasks: idea generation, idea promotion, and idea realization. Idea generation occurs when employees

produce new ideas to address challenges in their job. In teaching and learning, idealization refers to the creation of new conceptions. On the other hand, idea promotion is persuading others, particularly colleagues, to buy your ideas. At the same time, obtain support for putting the plan into action. Meanwhile, idea realization refers to instructors' efforts to apply innovative and creative ideas in teaching and learning activities, resulting in more meaningful teaching and learning sessions in schools and a good impact on student accomplishment and performance. At this point, creative ideas must be implemented in the teacher's teaching and learning procedures, even if the creative vision is at odds with the organization's previous practice (Hashim et al., 2019).

According to Palmer (2020), a person's commitment to a work ethic, career/profession commitment, and job involvement are all considered work commitments. Work ethic refers to how much a person wants to work. It refers to the modelling of character traits and attitude of determination and dedication toward a job whereas commitment to a profession relates to a person's commitment to their job. The level to which a person is involved in their work is called job involvement. At these levels, employees who are devoted have been demonstrated to be the most engaged.

3. Methodology

3.1. Research Design

This study used quantitative research, which refers to collecting and analyzing numerical data. The quantitative analysis finds patterns and averages, makes predictions, tests causal relationships, and generalizes results to broader populations (Bhandari, 2020). It also used a correlational research design that refers to the method that establishes a relationship between two closely-knit entities and how one impacts the other, and the changes that are eventually observed. It investigates relationships between study variables (Bhandari, 2020).

A correlation survey with the questionnaire as the primary data gathering tool was used. This research method was carried out to give value to naturally occurring relationships, and a minimum of two different groups were required to successfully conduct this quantitative research method. Since the study was intended to determine the significant relationship of teachers' innovative work behavior and work commitment to organizational dynamics and stewardship, the correlational research design was used.

3.2. Respondents of the Study

The respondents were the public elementary school teachers of the West District, Division of Lipa City. Specifically, it included 150 public elementary teaching personnel from nine schools of West District, Cluster I of Division of Lipa City designated as Teachers I to III and Master Teachers. Total numeration sampling was used to get the perceptions of teacher-respondents regarding the survey. Most of the teacher-respondents were 36-40 years old, female, with MAEd units, teaching varied subjects, with 1-5 services years and have attended school-based in-service trainings.

3.3. Research Instruments

The survey questionnaires were the main instruments for gathering the data. The researcher-made questionnaire described the respondent's profile and assessed measured the organizational dynamics, stewardship, innovative work behavior and work commitment. Thee questionnaire was externally and internally validated by the experts. External validation experts include two school heads, two master teachers, an English expert and two teachers who gave knowledgeable comments and suggestions for the refinement of the instrument. After the external validation, pilot testing to 30 teachers was done.

3.4. Research Procedure

The study sought permission from the Office of the Schools Division Superintendent to field the survey. The assistance of the school principals was requested to ensure the success of the online distribution of the research instrument via Google form as well as the monitoring of the progress of the response.

3.5. Statistical Treatment of Data

Descriptive statistics such as mean and standard deviation described the respondents' perception of the organizational dynamics and stewardship. The same statistical procedures were utilized in determining the respondents' perception of their innovative work behavior and work commitment. Meanwhile, Pearson Product-Moment Correlation (Pearson r) determined the relationship between the school's organizational dynamics and stewardship and innovative work behavior and work commitment of teachers in the West District. Significant relationships were tested at a 5% level of significance.

4. Findings and Discussion

Table 1

Organizational Dynamics Practices in Terms of Cognitive Imperative

	Mean	SD	VI
Cognitive Imperative			
The school……			
1. creates a well-developed plan for collaborative problem solving.	3.71	0.45	HP
2. provides coaching and technical assistance so that teachers will improve their performance in the teaching learning process.	3.79	0.41	HP
3. takes preliminary actions before the problem happens.	3.69	0.47	HP
4. exhibits expertise in solving ill-structured problems.	3.6	0.52	HP
5. has an understanding of how to help teachers acquire pedagogical content knowledge.	3.78	0.43	HP
Overall	**3.71**	**0.38**	**HP**
Social Imperative			
1. seeks to identify the will of a group and helps to clarify that will.	3.71	0.49	HP
2. helps the community understand the mission, vision and goal of the school through constant meeting with them.	3.79	0.41	HP
3. taps potential stakeholders to support school activities.	3.86	0.35	HP
4. stimulates a task-oriented atmosphere.	3.76	0.44	HP
Overall	**3.78**	**0.35**	**HP**
Personal Imperative			
1. helps teachers in developing professional growth.	3.83	0.37	HP
2. allows open forum which everyone can give their ideas.	3.71	0.47	HP
3. encourages teachers to keep learning, growing and become leaders in their own rights.	3.8	0.4	HP
4. creates an environment in which teachers can experiment, lead and develop.	3.75	0.45	HP
5. ensures that teachers have a healthy working environment that will benefit pupils in the long term.	3.82	0.4	HP
Overall	**3.78**	**0.36**	**HP**
Technological Imperative			
1. provides training for teachers on instructional technology.	3.77	0.42	HP
2. allows the use of presentation software such as Microsoft PowerPoint for presentations and lesson.	3.86	0.35	HP
3. provides technology resources that are necessary to develop technology- related skills.	3.76	0.44	HP
4. orients school staff on how to be creative and innovative.	3.71	0.46	HP
5. collaborates with other organizations on instructional technology and related services.	3.71	0.47	HP
6. supports the use of emails, voice notes, video recordings, and social media platforms and applications like Zoom, Google Meet and Microsoft Teams in keeping teacher informed.	3.81	0.39	HP
Overall	**3.77**	**0.35**	**HP**

Legend: 3.50-4.00 – Highly Practiced (HP), 2.50-3.49 – Substantially Practiced (SP), 1.50-2.49 – Slightly Practiced (SP), 1.00-1.49 - Not Practiced (NP)

Table 1 shows that organizational dynamics practices as to cognitive imperative is 'highly practiced'. The result suggests that the schools in West District – Cluster I of Division of Lipa City provide opportunities for teachers to work with one another and that the schools willingly help

teachers by providing them advice and assistance to improve their performance. Observation in the classroom, learning action cell (LAC) sessions, and individual coaching are essential for delivering technical support. Another implication exhibited in the findings is the expertise of schools in solving an ill-structured problem. For instance, the sudden closure of schools in Lipa City due to Taal volcano eruption and eventually due to pandemic are examples of ill structured problems which have no clear solution path. Despite that, as can be gleaned from the result, schools in West I of Lipa City still exhibited expertise in solving ill-structured problems. The creation of schools' Basic Education-Learning Continuity Plan is a quick response to the challenge brought about by COVID19 pandemic in education. It ensured continuous learning delivery despite the pandemic.

In terms of social imperative, the result reveals it is "highly practiced". It implicates that the schools have initiatives to involve stakeholders on school activities in order to achieve the mission, vision, and goal of the school. For instance, Brigada Eskwela which is done in preparation for the opening of classes, involves parents, barangay officials and other stakeholders to strengthen partnerships in ensuring the delivery of basic education. In addition, the General Parent-Teacher Association which allows parents to take part in school improvement planning also shows school-stakeholders partnership. By listening to the personal stories of stakeholders, school leaders can exhibit both professional and personal concern for them.

In terms of personal imperative, the result indicates that the respondents "highly practiced" organizational dynamics. It suggests that the schools inculcate in its teachers the relevance of professional enhancement, sharing of ideas and the provision of healthy working environment. Professional enhancement among the teachers in West I is evident in the numbers of teachers who have acquired units in MAEd and PhD/EdD. Based on the result, 59 and 10 teachers have units in MAEd and PhD/EdD, respectively and 38 and 4 teachers are MAEd and PhD/EdD graduates, respectively. Professional growth is one of the essential factors required since learning innovatively can aid teachers in uplifting their skills and applying them to helping the learners. It is also significant to mention that the schools recognized the voice of the teachers by expressing their ideas and opinions in an open conversation during meetings and trainings. Training and a healthy working environment must be offered for the teachers to flourish professionally. These are the exact assertions of Lyon and Maxwell (2020) that to get people to act, a leader must first move them on a personal level.

In terms of technological imperative, the result indicates that the respondents "highly practiced" organizational dynamics. It shows that schools make use of instructional technology and provides technology resources that are necessary to develop technology-related skills. It is evident in classrooms where televisions and projectors are properly installed. The provision of laptops and sim cards by the local government add up to why teachers perceived technological imperative as highly practiced in schools in Lipa. It is also significant to note that proper orientation to instructional technology was given, and collaboration was practiced. Teachers work together in many ways when they talk to their coworkers to share ideas and resources, talk about how their students are learning, do activities together, and make new knowledge. In these ways, teachers can work together to create and improve their learning to give their students good learning experiences. Collaboration is vital for making teachers feel like they are part of a professional community and getting personal satisfaction from their work.

Table 2 shows stewardship practices in schools concerning relational support. The result indicates that stewardship is highly manifested in schools in West District – Cluster I of Lipa. It means school heads practice effective communication to convey policies and processes that establish motivation, respect and good interests among teachers. It is evident in Teacher Induction Program of Department of Education wherein teachers are being oriented with the mission and vision of the organization, being offered support, guidance and orientation during the transition to their teaching jobs and being communicated with their role in the field of education. In addition, team building activities and open forum during meetings are good way to foster relational support. It is noteworthy to mention that biases and self-centered decisions of the administration are not encouraged thus opinions are being acknowledged to foster fairness.

In terms of contextual support, the result indicates that stewardship in contextual support is highly manifested. It means schools foster clarity of vision and promotes shared understanding among teachers to make complex issues or problems easier to understand and resolve. When the change is that big, everything ends up being the same. Here is where good leaders step in, no matter what level they are. They ensure that teachers know the priorities and stay inspired and guided by a single vision.

Table 2

Manifestation of Stewardship

	Mean	SD	VI
Relational Support			
The school head……			
1. communicates the extensive mission and vision of the organization.	3.75	0.44	HM
2. communicates clear role expectations.	3.7	0.47	HM
3. acts to the policies and processes of the organization itself.	3.75	0.44	HM
4. understands the individual needs and motivations of teachers within the school context.	3.75	0.44	HM
5. shows concern, respect, and fairness for the teacher's needs and interests.	3.75	0.46	HM
6. is unbiased in decisions and seek out others' opinions on important issues.	3.67	0.5	HM
Overall	**3.73**	**0.39**	**HM**
Contextual Support			
1. provides a clear vision for the school.	3.8	0.4	HM
2. promotes a shared understanding about complex issues.	3.72	0.47	HM
3. cuts through complex or ambiguous problems to make them easier to understand.	3.67	0.49	HM
4. explains why things are being done a particular way.	3.76	0.43	HM
5. resolves conflicts constructively.	3.71	0.45	HM
6. creates processes that facilitate the work.	3.76	0.44	HM
7. ensures that teachers take account the need of their work.	3.76	0.43	HM
8. makes clear how responsibilities are being designated.	3.74	0.46	HM
Overall	**3.74**	**0.39**	**HM**
Motivational Support			
1. praises teachers on tasks accomplished on time.	3.79	0.41	HM
2. acknowledges teacher's capability to perform work-related activities.	3.79	0.41	HM
3. shows trust to those teachers who have a sense of accountability.	3.81	0.4	HM
4. assigns work to qualified and skilled teachers.	3.79	0.41	HM
5. provides activities that allow teachers to discover their sense of purpose.	3.7	0.51	HM
6. gives incentives and rewards to performing teachers.	3.61	0.55	HM
Overall	**3.75**	**0.39**	**HM**

Legend: 3.50-4.00 – Highly Manifested (HM), 2.50-3.49 – Substantially Manifested (SM), 1.50-2.49 – Slightly Manifested (SM), 1.00-1.49 - Not Manifested (NM)

In terms of motivational support, respondents highly manifested stewardship that school leaders instill among teachers a sense of intrinsic teaching drive by means of praising teachers, acknowledging teacher's work, showing trust and giving incentives and rewards. Showing trust to those teachers who have a sense of accountability implies that the school and its administrator notice the potential of a responsible teacher. It includes giving chairmanship or a coordinator of a specific project. It would be irresponsible for school administrators to place unquestioning faith in their colleagues and permit everyone to work freely and without strategic guidance. However, at the opposite extreme of this trust continuum is the repressive, judgmental, deficit model, which posits that no teachers can be trusted and that all teaching personnel require regular checking, monitoring, and measuring. School leaders can design accountability mechanisms grounded on

trust and professional esteem while allowing for the iterative tracking and improvement of standards. On the other hand, awards and incentives were still given but not abrupt. Nevertheless, the majority of teachers have a daily routine. Lesson preparation, grading, classroom management, and administrative duties comprise the landscape. These findings were similar to Wang et al. (2016) that motivation is a personal condition that drives a person's desire to participate in particular activities to achieve their goals. Therefore, motivation is a driving force that manifests itself as active for a person to attain the goals he has set for his fulfillment.

Table 3

Innovative Work Behaviors

	Mean	SD	VI
Idea Generation			
1. I discover new teaching strategies related to planning and implementation of lessons.	3.63	0.48	HP
2. I generate original ideas for challenges regarding teaching and learning process.	3.62	0.5	HP
3. I select appropriate innovative activities suited to the needs of my pupils.	3.71	0.46	HP
4. I take new/relevant ideas and proposals seriously regardless of their source.	3.6	0.52	HP
5. I participate in continuous professional development and learning to learn about new practices in education.	3.79	0.41	HP
Overall	**3.67**	**0.41**	**HP**
Idea Promotion			
1. I take risks to support new ideas about trends in education and convince co-teachers to support them as well.	3.57	0.51	HP
2. I push ideas forward so that they have a chance to be implemented.	3.55	0.51	HP
3. I inspire others to adopt new teaching practices.	3.63	0.49	HP
4. I mobilize support and acquire approval for innovative ideas in education.	3.52	0.54	HP
5. I encourage colleagues to propose innovations to improve quality education.	3.61	0.49	HP
Overall	**3.58**	**0.45**	**HP**
Idea Realization			
1. I work collaboratively across the school to develop and implement new practices.	3.79	0.41	HP
2. I apply changes that are beneficial to teaching and learning process.	3.77	0.42	HP
3. I adopt new teaching practices into my daily work.	3.82	0.39	HP
4. I transform innovative ideas in education into useful applications.	3.71	0.46	HP
5. I evaluate the utility of innovative ideas.	3.59	0.56	HP
Overall	**3.74**	**0.37**	**HP**

Legend: 3.50-4.00 – Highly Practiced (HP), 2.50-3.49 – Substantially Practiced (SP), 1.50-2.49 – Slightly Practiced (SP), 1.00-1.49 - Not Practiced (NP)

Table 3 manifests the innovative work behaviors of teacher-respondents in idea generation. The result indicates that the respondents “highly practiced” idea generation. It implies that the teachers are discovering new teaching ideas while generating and selecting genuine concepts that are beneficial to teaching. Teachers are interested in attending professional development opportunities. Professional development programs offered by private and public entities may help

teachers grow professionally and learn new teaching strategies that can be applied in day-to-day teaching. Another reason is that CPD is required to renew a teacher's license and must be presented to the Professional Regulation Commission (PRC).

In terms of idea promotion, the result indicates that the respondents "highly practiced" idea promotion. This means that teachers take risks in supporting and pushing ideas forward and encourage others to adopt new teaching practices and propose innovations. It implies that the teacher-respondents are open to assisting and helping other teachers adopt new teaching practices that may help other teachers. Idea promotion can result in the preparation of proactively new teaching ideas and approaches in the classroom. Using these innovative teaching styles and methodologies is to improve academic achievements and address real challenges to promote equal learning. Hence, teachers may share innovative strategies through Learning Action Cell (LAC) session. In this way, it can be used and adopted by other teachers not only in your school but also in other schools in the district or division.

In terms of idea realization, the result indicates "highly practiced." This suggests that teachers introduce, adopt, and apply new ideas in teaching and learning processes in school in the form of new procedures. Realization of ideas can be collaboratively applied by adopting new teaching practices in transforming innovative ideas into practical applications that may benefit both the teachers and the learners. The findings show that teachers are willing to share best practices among colleagues. It is healthy in a teaching organization because it can benefit all teachers. Best practices of a teacher can be utilized by all teachers that can result in learner proficiency and academic achievement. The findings support the study of Mascareo et al. (2021) on the idea realization where closing behaviors are crucial, as planning and organization are required for successful implementation.

Table 4 shows work commitment practices as to job involvement. The result indicates that the respondents are "highly committed." Participating in school activities such as meetings, trainings, seminars or webinars and being responsible for performing the duties and completing all tasks in school are some evident indicators of teachers being highly committed. It is not surprising since it is included in the duties and responsibilities of a teacher. School activities that focus on professional development are a requirement. As a teacher, the task assigned such as teaching, preparation of lessons, computation of grades, and others, are part of daily tasks. Furthermore, overtime at work is something innate to teachers. Most teachers stay in school until dark to finish all the work needed to be submitted. It implies that teachers are willing to extend working hours

to finish the work and submit papers on time. Some teachers perform their job outside office hours most of the time since their homes are considered an extension of the school.

Table 4

Work Commitment

	Mean	SD	VI
Job Involvement			
1. I participate in school activities such as meetings, trainings, seminars and/or webinars.	3.91	0.29	HC
2. I am responsible in performing my duties and completing all my tasks in school.	3.91	0.29	HC
3. I am willing to extend my working hours if needed.	3.87	0.33	HC
4. I collaborate with parents, teachers and head in completing a task.	3.9	0.3	HC
Overall	**3.9**	**0.27**	**HC**
Work Ethics			
1. I model strong character traits, including perseverance, honesty, respect, justice, fairness, patience, and unity.	3.88	0.33	HC
2. I treat every student with kindness and respect without displaying any bias, prejudice, or discrimination.	3.91	0.29	HC
3. I commit wholly to the teaching profession.	3.87	0.34	HC
4. I keep all of the school's agreements, follow all of the rules, and keep track of all of the money and resources they have.	3.83	0.4	HC
5. I develop good relationships with school employees, parents, and other stakeholders.	3.91	0.29	HC
6. I avoid disclosing personal information regarding colleagues and pupils unless it is authorized by law.	3.86	0.35	HC
7. I stay away from any form of gossip, even whether it's about co-workers or pupils.	3.86	0.35	HC
8. I collaborate with fellow teachers, parents, and administrators to support and establish a learning and growing environment.	3.89	0.31	HC
Overall	**3.88**	**0.29**	**HC**
Profession			
1. I research on how pupils learn best, as well as how culture and socioeconomic factors affect them individually.	3.81	0.41	HC
2. I keep up with the times and adapt to the exploration of technology and major changes in the way the world works.	3.84	0.37	HC
3. I am constantly willing to learn and adapt, not just with new curricular content, but also with new teaching procedures, approaches and strategies.	3.89	0.31	HC
4. I abide by rules and regulations and able to cope with the principles of teaching profession despite challenges.	3.91	0.29	HC
5. I never stop learning new methods and techniques as well as strategies.	3.87	0.33	HC
6. I actively contribute to the profession by striving to expand and develop my knowledge in all areas.	3.86	0.35	HC
7. I value variations in ethnicity, culture, social status, disability, and sexual orientation, among other things.	3.87	0.34	HC
8. I like working with pupils and care about their development.	3.91	0.28	HC
Overall	**3.87**	**0.29**	**HC**

Legend: 3.50-4.00 – Highly Committed (HC), 2.50-3.49 – Substantially Committed (SC), 1.50-2.49 – Slightly Committed (SC), 1.00-1.49 – Not Committed (NC)

In terms of work ethics, the result indicates that the respondents are also “highly committed.’ It implies that the teachers model character traits and attitude of determination and

dedication toward teaching job. It is reflected in classes during class sessions and class observations. It is evident with the frequent visits of parents and other stakeholders during PTA meetings and school activities where they are engaged and included in the school program and activities. Also, teachers track all school spending and adhere to school rules and agreements. The findings are congruent with Marri et al. (2012) that work ethics include accommodating, compassionate, proactive, and responsive.

In terms of profession/career, this shows that teachers are "highly committed" to their profession. The findings show that teachers adhere to the school's and the PRC's norms and regulations. It also signifies that the teachers do their utmost to assist the students by caring about their growth. As a teacher, there are many challenges and difficulties experienced. Lack of materials, insufficient funds, government support, and others. All of these are faced with strength by the teachers. There are many times when teachers felt giving up, but they stand still to help the learners. Being a teacher is not just a profession but a vocation.

Table 5

Significant Relationship Between Organizational Dynamics, Stewardship and Innovative Work Behavior

Organizational Dynamics	Innovative Work Behavior			Stewardship	Innovative Work Behavior		
	IG	IP	IR		IG	IP	IR
Cognitive imperative	.600**	.572**	.632**	Relational support	.644**	.588**	.668**
Social imperative	.598**	.550**	.641**	Contextual support	.645**	.554**	.684**
Personal imperative	.655**	.553**	.679**	Motivational support	.633**	.547**	.671**
Technological imperative	.641**	.543**	.675**				

**. Correlation is significant at the 0.01 level (2-tailed).

Legend: (0 - ±0.35) Weak, (±0.35 - ±0.65) Moderate, (±0.65 - ±1.0) Strong

IG – Idea Generation, IP – Idea Promotion, IR – Idea Realization

Table 5 shows that there is a significant relationship between organizational dynamics and innovative work behavior as well as stewardship and innovative work behavior. There is a moderate relationship between cognitive imperative and idea generation, idea promotion and idea realization. In addition, there is a moderate correlation between social imperative and idea

generation, idea promotion and idea realization. This suggest that the involvement of stakeholders in Brigada Eskwela, GPTA projects and programs and other school activities help teachers develop creative and innovative learning environment for the learners. This allows teachers to be innovative and adoptive to new practices in transforming ideas into practical applications that may benefit both teachers and learners.

Moreover, there is a strong correlation between personal imperative and idea realization as well as technological imperative and idea realization. This implies that schools in West I – Division of Lipa City give importance to personal and professional enhancement as well as to technological and digital transformation. This is evident in the number of teachers who have acquired units in post graduate studies. This enables teachers to enhance instructional services and processes.

The support of school heads to the teachers in West I – Division of Lipa City is reflected in the strong correlation between relational, contextual and motivational support and idea realization. Relational support such as guidance and orientation to new teachers, team building activities and open forum during meetings enable teachers to build good working relationships thus, making it easier for teachers to work collaboratively with each other and work easily on discovering, trying and implementing new ideas. Likewise, fostering clarity of goals and promoting shared understanding among teachers provide contextual support which help them to think ‘beyond the box’ and translate creative thinking into tangible changes and solutions that improve the work unit and organization. On the other hand, motivational support such as praising teachers, acknowledging teacher’s work, showing trust and giving incentives and rewards drive teachers to work hard, discover new ways of doing things and innovate.

Institutional success and the principal's function are mutually constitutive and interdependent. Principals provide stewardship of new ideas, as well as support and motivate teachers in enhancing their knowledge and skills, extending the role of school principals so that, as innovators, they are powerful change agents in the organization, where he or she steers the staff toward the completion of quality tasks. The school principals must not only provide innovative, creative, and perceptive intellectualization to fulfill the school's vision and goal, but also perform their duties to the best of their ability. Innovative work behavior such as idea generation, idea promotion, and idea realization have a significant relationship to how the stewardship of an organizational leader fosters supports in the form of relational, contextual, and motivational support. The role of the school principal and the success of an institution go hand in hand and depend on each other. Principals are in charge of new ideas and help and encourage teachers to

improve their skills and knowledge (Hallinger & Lee, 2013). This is the assertions of Nellitawati (2018) that the role of school principals as innovators are powerful change agents in the organization, guiding the staff to do good work.

Table 6

Significant Relationship Between Organizational Dynamics, Stewardship and Work Commitment

Organizational Dynamics	Work Commitment			Stewardship	Work Commitment		
	JI	WE	CP		JI	WE	CP
Cognitive imperative	.495**	.518**	.511**	Relational support	.463**	.486**	.504**
Social imperative	.543**	.544**	.575**	Contextual support	.518**	.538**	.519**
Personal imperative	.581**	.571**	.608**	Motivational support	.518**	.562**	.560**
Technological imperative	.545**	.576**	.593**				

**. Correlation is significant at the 0.01 level (2-tailed).

Legend: (0 - ±0.35) Weak, (±0.35 - ±0.65) Moderate, (±0.65 - ±1.0) Strong

JI – Job Involvement, WE – Work Ethic, CP – Commitment to Profession

Table 6 shows that there is a significant relationship between organizational dynamics and work commitment as well as stewardship and work commitment. There is a moderate correlation between organizational dynamics as to cognitive, social, personal and technological imperative and work commitment as to job involvement, work ethic and commitment to profession. This implies that organizational dynamics practices in West I – Division of Lipa City intensify teacher's commitment to work. This is evident in schools' quick response to sudden unexpected ill-structured problems such as the Taal Volcano eruption and the COVID 19 pandemic which both drastically affected the education of learners. Sudden closures of schools due to these challenges paved way to the creation of learning continuity plan which ensured continuous learning delivery particularly during the pandemic. This exhibited teacher's extreme commitment to their profession as they became frontliners distributing modules and other learning materials. Technology also played important role during these times as online classes became one of the modalities during the pandemic. Teachers attended several webinars to familiarize themselves and be oriented with the latest applications and trends in educational technology. This explains that organizational dynamics practices such as creating a well-developed plan, taking preliminary actions and

exhibiting expertise in solving ill-structured problems enable teachers to be involved and committed to their work.

With all these challenges faced by the teachers, stewardship employed by the school heads became very important. Table 6 shows that there is a moderate correlation between stewardship as to relational, contextual and motivational support and work commitment as to job involvement, work ethic and commitment to profession. This implies that school heads' effective communication to convey policies and processes helps teachers to understand the value of their work better making them more committed and involved with their tasks. This is evident in schools in West I – Division of Lipa City particularly in the relational, contextual and motivational support they received from the school heads and other stakeholders. It is noteworthy to mention that the continuous professional development done through webinars, guidance and orientation done through Teacher Induction Program and the provision of laptops and sim cards to teachers with the help of the local government unit as well as the giving of incentives and awards are some of the practices that help teachers to be more committed to work. School heads play major role in making all these practices possible with their stewardship styles.

5. Conclusion

This study confirms that organizational dynamics and stewardship in school are significantly related to innovative work behavior and work commitment. Thus, the null hypotheses posited in the study are not supported. Furthermore, organizational dynamics is highly practiced in schools in terms of cognitive, social, personal, and technological imperative. Similarly, stewardship in the organization regarding relational, contextual, and motivational support is highly manifested by the respondents. The work commitment regarding job involvement, work ethic, and commitment to profession/career is also highly practiced.

Based on the findings, the school organizations may organize a training and team-building activities that promotes camaraderie among colleagues. Future researchers may conduct a study to determine the relationship between organizational dynamics and stewardship in promoting innovative work behavior and commitment at work in other districts.

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Governance and Employee Retention: An Industry Risk and Outlook During Pandemic

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Abstract

This paper focused on the assessment of governance risks and its effects to employee retention of service-based businesses in Laguna, Philippines. The study exclusively adopted the governance risks from LaConte's Strategic Risks Model and Job Embeddedness' Theory for employee retention. Descriptive research and purposive sampling were employed with 360 retrieved questionnaires. The questionnaire used in this study were subjected to reliability testing with acceptable to good internal consistency. Data were evaluated using statistical tools of frequency, rank, mean, weighted mean and ANOVA. The highest governance risks experienced by business owners during the pandemic in relation to planning is the suspended implementation of goals and objectives while in terms of monitoring and control, unpreparedness on future risks was ranked first. Management support to the professional needs of its employees is significant for reduced turnover of employee retention. Moreover, for the employee productivity, involvement of the employees to the business planning got the highest mean. Planning, and monitoring and control have strong significant difference when grouped according to service sector while under employee retention, reduced turnover is significantly different when grouped according to profile factor. However, the employee productivity showed only strong significant difference in service sector. The study suggested that LGUs may develop a program for governance management and employee empowerment program to aid the recovery programs for service-based businesses.

Keywords: *governance risks, employee retention, micro, small, medium enterprises and pandemic*

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1. Introduction

Epidemics and pandemics are not merely passing through; they have a lasting influence on the economy, people and society. World Health Organization, Country Leaders and people of the community claimed that COVID-19 epidemic has affected many lives throughout the world and poses an unprecedented threat to public health, food systems, and the workplace. Likewise, hundreds of millions of businesses are in danger of going out of business. Many people are unable to feed themselves and their families during lockdowns since they do not have the means to make money.

COVID-19 was first reported in the Philippines in the year 2020, month of January, exactly after two months, the country had been placed under a strict community quarantine, restricting mobility, and business activities. While these measures slowed the spread of COVID-19, they had far-reaching consequences for family incomes, employment, education, food security, and businesses. Data released by the Philippine Statistics Authority stressed that between April and July 2020, eighty-eight percent of businesses reported a drop in sales. In addition, they have declared that the leading causes of decreased sales were limited operations – fifty-eight percent and customers' inability to visit brick-and-mortar businesses, thirty-eight (38%). Many industries claimed to be cash-strapped and behind on payments. Sixty-six percent of businesses had insufficient cash for more than a month to cover all expenditures and liabilities, including workers, suppliers, taxes, and loan repayment. In forty-eight percent of cases, businesses were in default. Despite cautious optimism that sales and jobs will recover over the next three months, many businesses expect their financial situation to worsen. The government passed two financial stimulus laws last year that provided targeted aid to workers in specific businesses, despite some critics calling them insufficient. Two-thirds of businesses have adopted or increased their use of the internet, social media, specialized applications, and digital platforms for various business tasks, with these companies claiming that digital solutions accounted for 10% of their sales. Companies of all sizes, sectors, and regions have increased their use of digital solutions in response to COVID-19. Hence, for businesses that rely significantly on in-person contact, such as those in the banking and insurance industries as well as those in the hotel, telecommunications, and personal and industrial services, the task is particularly difficult. Physical separation, the elimination of unnecessary operations, and limited interaction are crucial for protecting human health, but they also present serious problems for these businesses' ability to continue serving their clients and

exceeding their expectations. The human dimension of the problem will need adherence to workplace safety and health measures, as well as providing access to decent employment and the preservation of labor rights in all industries. This paper was sought to determine the governance risks experienced by the business owners during the pandemic as well as the status of the retention of their employees. Moreover, this will be a basis to future risk reduction and employee empowerment programs.

This research paper aims to identify the intensity of governance risks experienced by the business owners of service - based businesses during the pandemic. Likewise, to determine the effects of the governance risks as perceived by the business owners. To recognize the significant differences of strategic risks as well as employee retention when grouped among the profile factors.

2. Literature Review

2.1 Governance Risk

Institutional approaches, policy mobilities, spatial imaginaries, and planning styles are the four major tenets of urban change in terms of planning and governance. The issue for metropolitan regions—especially those with policy and decision-making responsibilities—is a growing realization that these spaces are often reliant on insufficient urban-economic infrastructure and fragmented planning and governance systems (Zimmermann et al., 2020). The global economic crisis of 2008 and 2009, as well as various financial scandals involving the managements of Enron, WorldCom, and Parmalat, have piqued the interest of a wide range of stakeholders in the effectiveness of corporate governance (CG) in firms (Kyereboah-Coleman, 2008; Benjamin, 2009; Gill and Mathur, 2011; Fallatah and Dickins, 2012; Marn and Romuald, 2012; Shahwan, 2015). Similarly, conferring to the International Monetary Fund (IMF) Report (2009), the problem of corporate failures as a result of the global financial crisis has worsened because it is linked to financial institutions, which are the Asian Economic and Financial Review main pillars in capital market stability, serving as financial intermediaries for mortgages, government securities, corporate debt, equity markets, and derivatives, among other things. Several prominent financial institutions around the world no longer exist or have been defunct.

The leader's involvement in defining and implementing company purpose and vision has received a lot of attention in research, but employee worldviews on mission and vision have been overlooked. For instance, the exploratory study of Kopaneva and Sias, (2015), which is guided by the communicative constitution of organizations (CCO) perspective, recognized that employees, as well as leaders, contribute to shared knowledge about what their organization stands for and where it is headed. The findings of the study revealed a significant lack of alignment between employees and their employers. In general, less than half of the themes were shared between the employee and official versions. Official statements tended to be significantly broader and more complicated than employee versions in terms of content. These discrepancies show that incorporating employee worldviews into higher-level organizational documents may be problematic.

According to Sonmez and Adiguzel (2020), the first step to organizational success, which is the main purpose of leadership, is to have the right strategic vision, given the environment at any given time. The mission, or purpose, stems from the vision. However, a good vision without the capacity to communicate it to personnel in a way that they understand could be ineffective. There are suggestions for making the connection between vision and purpose.

Organizations of all types, whether public, not-for-profit, private, for-profit, multinational, or small and medium-sized, have largely adopted mission and vision statements as an essential part of the strategic management process. Mission and vision statements are widely regarded to have an impact on strategy and most aspects of organizational success. The majority of businesses have mission and vision statements. Mission and vision statements are inherent in the worst-case scenario. Darbi (2012) asserts that mission statements have consistently been demonstrated to be the top-rated management tool employed by senior managers throughout each of the ten years prior to his study. Similarly, Mullane (2002) suggests and empirically supports the usage of mission and vision statements for in contrast to many who claim they are ancient documents that are often displayed as wall hangings, they are realistic day-to-day activities.

In the recent years, a new participatory governance dynamic has reshaped relationships and responsibilities in policy and program formulation and implementation. Participatory governance encompasses not just the public, private, and non-profit sectors, but also the internal workings of an organization. It allows for individual and group participation while also challenging long-held institutional conventions. Cerna (2013) brings together a multi-disciplinary team of practitioners

and scholars from North America, Europe, Africa, and Australia to evaluate new evidence relating to planning, conflict mediation, and public decision-making processes in civil society. The contributors examine the dynamics of stakeholder involvement as deliberative processes built around the primary principle of shared responsibility in a study that spans institutional viewpoints and operational issues. This diversity of participation might lead to more effective public decision-making. This is also applicable to private sectors where in planning is a crucial part to business success and survival.

Preparedness and knowledge in expected and unexpected risk like fire, national disaster and Pandemic like COVID-19 is necessary to the survival of the business, people and nation. In the study of Bartik et al. (2020), a survey of more than 5,800 small businesses between March 28 and April 4, 2020 investigated the impact of COVID-19 on small businesses. Several common threads emerged. First, just a few weeks into the crisis, enormous layoffs and closures had already occurred. Second, the likelihood of closure was adversely related to the anticipated duration of the crisis. Furthermore, firms had vastly differing perspectives on the duration of COVID-related outages. Third, many small firms are financially vulnerable: at the time of the survey, the median business with more than $10,000 in monthly expenses had just around two weeks of cash on hand. Fourth, the majority of enterprises intended to use the Coronavirus Aid, Relief, and Economic Security (CARES) Act to obtain funds. However, many people anticipated hurdles in obtaining the program, such as bureaucratic red tape and determining eligibility. They also compare loan take-up rates and company resilience effects to grant-based programs using experimental variation.

2.2. Employee Retention

According to Wisconsin State Government (2015), worker maintenance is a methodical work to establish and encourage a climate that valour representatives to stay utilized by having strategies and practices set up that address their different needs. Mita (2014) characterized representative maintenance as "a procedure took on by business to keep a powerful labor force and simultaneously meet necessities.” Bidisha (2013) describes it as a process "in which the representatives are urged to stay with the association for the most extreme timeframe or until the finishing of the task." However, the term representative maintenance is characterized in various ways, it fundamentally signifies those different measures taken by associations to empower its worker so they stay with it for a more extended length of time. The essential justification behind maintenance of representatives is to keep its capable workers from leaving (James & Mathew,

2012). The fundamental point of representative maintenance procedures and practices is twofold. One is to lessen representative turnover and second is to impressively decrease the related costs of recruiting and preparing and direction of the new workers (Iqbal & Hashmi, 2015).

Representative maintenance advances the wellbeing and outcome of the organization. The time, stress, and cost of recruiting and preparing new representatives are critical, and turnover can adversely affect business results. High representative turnover achieves various issues including significant expenses, information misfortune, and low efficiency (Paulsen, 2021). It is additionally a significant variable in corporate procedure and is one of the capacities in human asset the executives that is the functional capacity. In this functional capacity of upkeep which means keeping up with the labor force to endure work in the organization (Tampubolon, 2014).

Kossivi and Kalgora (2016) identified factors for employee maintenance which include balance between fun and serious activities, pay, style of administration of the board, workplace, independence, preparing and improvement, and social help. However, Shin et al. (2020) assert that academics have paid relatively little attention to the relationship between managers' job crafting and their turnover intention, as well as the intermediary mechanisms. Through regression-based path modeling, there is a negative link between job crafting and role ambiguity, a positive relationship between role ambiguity and emotional tiredness, and a positive relationship between emotional exhaustion and turnover intention after controlling for role conflict and role ambiguity.

In a study of Maurer (2021) of 2,000 working persons, results showed that 52 percent are looking for work, up from 35 percent a year before while forty-six (46%) of respondents feel less connected to their work, and forty-two (42%) believed company culture has deteriorated since the outbreak began. Only twenty-one (21%) stated they are extremely engaged at work. According to Wen et al. (2020), emotional weariness has been identified as a critical mediator in the relationship between role stress and turnover intention. The link between emotional tiredness and the desire to change jobs has been extensively established. Resources theories like the JD-R model and conservation of resources (COR) theory can explain this link. Mental exhaustion caused by difficult job expectations has a long-term negative impact on people's health and well-being, causing many to leave their jobs, according to the JD-R framework.

2.3. Model and theory

This study came from theories and models of Strategic Risk of LaConte (2020) for governance risks and Job Embeddedness Theory for employee retention. In business, the company must take several risks and bear the consequences if the risk does not pay off. However, there are concerns that if certain decisions are not made, such as changing the business strategy or something similar, the firm would be eviscerated. These are tactical dangers.

In the organizational paradigm, every corporation takes risks. They must do so or they will never grasp the market's direction or how they will need to improvise to keep their ship afloat in this wide, ever-changing ocean. Strategic risks are those that have an impact on a company's overall strategy for operating and conducting business. They, like the other hazards that confront enterprises today, are extremely difficult to detect and manage.

Job embeddedness theory was first proposed in 2001 as a theory to explain why employees remain in firms. The theory's predictive value is demonstrated by the gathered empirical evidence reported in a compelling meta-analysis. Researchers have discovered that job embeddedness predicts remaining as well as other favorable work outcomes such as in-role and extra-role performance in a variety of contexts (for profit and non-profit, US and worldwide). Furthermore, those who are more immersed are less likely to be absent or participate in detrimental work practices, according to their findings. Both researcher and practitioner perspectives on staying have been supplemented by recent theoretical elaborations indicating additional causes, moderators, and outcomes of embeddedness. Many practical implications for companies striving to improve job embeddedness and its associated results are advanced based on theory and inquiry.

3. Methodology

This paper is descriptive research that employs questionnaires to compile information on a variety of topics. This information seeks to determine the degree to which certain conditions can be found among these subjects.

Purposive sampling technique was used as a type of non-probability sampling where people are chosen to take part in the survey using their own discretion. It was restricted to registered service-based businesses along Laguna Province. Researcher chose and distributed 420 survey questionnaires out from total population of 18,685 and retrieved only 360 from service-

based businesses with margin of error of 5%. The participants of the research were limited to the business owners or managers of the business representing one from each of the business. In terms of the business profile, micro business has the highest frequency and percentage of 234 and 65%, while medium business has the lowest frequency and percentage of 35 and 9.72%. Majority have employees from 1 to 10 (65%) while 30% have 10 to 99 employees. The people and the business itself who participated in the study were assured that their identity would not be publicly revealed to prevent them from experiencing problems from the responses they provided to the researcher.

Questionnaires were made both in Google form and hard copy. As Google forms were not answered by the respondents, the researcher opted to gather in face to face set up. Structured survey questionnaires were made and validated using pilot testing.

Table 1

Result of Cronbach's Alpha analysis on survey questionnaire on Governance Risks and Employee Retention

VARIABLES	Cronbach's alpha	Internal Consistency
GOVERNANCE RISK		
Planning	.805	Good
Monitoring and Control	.825	Good
EMPLOYEE RETENTION		
Reduced Turnover	.734	Acceptable
Employee Productivity	.674	Acceptable

The questionnaire consists of three parts: part 1 was designated to business profile as to the business category according to the capital requirement, number of employees, years of business operation and service sector, whereas part II was intended to measure the intensity of governance risks as to planning, and monitoring and control experienced by the business owners during the pandemic with Likert scale of 5. On the other hand, the part III was used to determine the perceived effects of governance risks to the performance of employee retention of service-based businesses using the Likert scale of 5.

Frequency count and percentage were used to determine the profile of the respondents. Mean, composite mean and rank were used to measure the perceptions of the respondents as to governance risks and their business performance as to employee retention. ANOVA was the tool

in computing the significant differences of governance risks and employee retention as to the business profile factors.

4. Results and Discussion

Table 1

Governance Risks Experienced by the Business Owners due to Pandemic

Governance Risks	WM	AR	Rank
Planning			
Difficulty in the formulation of vision and mission.	3.67	High	3
Suspended implementation of goals and objectives.	3.83	High	1
Loss of employees' training and development.	3.79	High	2
Absence of future strategic planning for expansion as to services offered.	3.39	Moderate	5
Lack of project plan for expansion as to branches or outlet.	3.49	High	4
Composite Mean	**3.63**	**High**	
Monitoring And Control			
Non awareness of future instances of fraud within the business.	3.56	High	5
Failure to monitor future risks.	3.65	High	2
Irregular documentation of risks.	3.62	High	3
Unpreparedness on the future risks.	3.66	High	1
Inconsistent evaluation of tasks in achieving objectives and goals of the business.	3.58	High	4
Composite Mean	**3.61**	**High**	
Average Composite Mean	**3.62**	**High**	

Legend: 4.21 – 5.00 Very High; 3.41 – 4.20 High; 2.61 – 3.40 Moderate; 1.81 – 2.61 Low; 1.00 – 1.81 Very Low Risk

Table 1 shows the intensity of governance risks faced by business owners as a result of the pandemic with an average composite mean of 3.62. This table illustrates that the highest weighted mean score of 3.83 for the governance risk experienced by business owners during the pandemic in relation to planning is the suspended implementation of goals and objectives. The absence of future strategic planning for service expansion has a weighted average of 3.39 and a moderate average rank. The composite mean of the governance risk experienced by business owners during

the pandemic in terms of monitoring and control is 3.61. Unpreparedness on future risks is ranked first, with a weighted average of 3.66.

The results coincide with Engidaw (2022) that crises undermine confidence, weaken company value, threaten business goals and objectives, and even result in business failure. Small businesses are thought to be more sensitive to crisis occurrences due to lower levels of preparedness, resource constraints, relatively weak market positions, and increased reliance on government and other domestic agencies, according to existing literature. Due to a scarcity of work opportunities, new start-up enterprises have a higher probability of surviving during crisis periods than during expansion years. However, during crises, entrepreneurs pursued new opportunities and established new directions for their firms, which helped to mitigate the negative effects of crises by maintaining the flow of goods and services and restoring the public confidence of other business owners and the community at large, and entrepreneurs pursued new opportunities and established new directions for their firm.

Table 2

Perceived effects of Governance Risks on Business Performance in terms of Employee Retention

Employee Retention	WM	AR	Rank
Reduced Turnover			
Strong support of the management to the professional needs of the employees.	3.13	Moderate Performance	1
Provided workplace security to the employees.	3.02	Moderate Performance	4
Compliance of the management to the government labor laws.	3.06	Moderate Performance	2
Security of tenure regardless of COVID - 19.	3.05	Moderate Performance	3
Composite Mean	**3.07**	Moderate Performance	
Employee Productivity			
Attractive remuneration packages for employees.	3.09	Moderate Performance	2.5
Embedded work - life policies to the employees' welfare.	3.09	Moderate Performance	2.5
Involvement of the employees to the business planning.	3.13	Moderate Performance	1
Composite Mean	**3.10**	Moderate Performance	
Average Composite Mean	**3.09**	Moderate Performance	

Legend: 4.21 – 5.00 Very High Performance; 3.41 – 4.20 High Performance; 2.61 – 3.40 Moderate Performance; 1.81 – 2.61 Low Performance; 1.00 – 1.81 No Performance

Table 2 shows the perceived effects of governance risks on business performance in terms of employee retention. On reduced turnover, indicator 1 got the highest weighted mean of 3.13 with moderate performance while indicator 2 got the lowest at 3.02 with the same performance with composite mean of 3.07 for reduced turnover. Management support to the professional needs of its employees is significant for reduced turnover of employee retention. Naujokaitiene et al. (2015) asserts that employees and employers benefit from organizational support in equal measure. Employees benefit from higher salaries, better working conditions, satisfaction with manager attention, and the sense that their work is meaningful and contributes to the organization's operations, whereas the organization benefits from more committed employees who work harder and more effectively.

Moreover, for the employee productivity, indicator 3 which indicates that *"Involvement of the employees to the business planning"* got the highest mean of 3.13 and indicators 1 and 2 got the same mean of 3.09, all indicators got moderate performance and composite mean of 3.10 while all stated variables got the average composite mean of 3.09 with moderate performance. Productivity of employees comprises involvement in the process of business planning since they are the vital part of the workforce. As Davis et al. (2012) affirm that employees are significant resource for strategy planning and they must be engaged, knowing that the best plans will be useless without them (Carlier et al., 2017; Lo & Fu, 2016), because input should be gathered from all levels and from all employees regardless of position (Wheelen & Hunger, 2012).

Table 3 interprets the significant differences on the perceived governance risks of businesses in the service industry in Laguna when grouped by business profile. In terms of business profile, on years of service, indicator 1 on planning got the p-value of .014 while indicator 2 on number of employees got 0.035. Moreover, indicator 3 on years of service got 0.333 p-value and indicator 5 got p-value of 0.041 in terms of business capital and p-value of 0.044 for number of employees.

Table 3

Significant Differences on the Perceived Governance Risks of Businesses in the Service Industry in Laguna Grouped by Business Profile

GOVERNANCE RISKS	Business Capital		Number of Employees		Years of Business Operation		Industry/ Sector	
	F	p	F	p	F	p	F	p
Planning								
Difficulty in the formulation of vision and mission.	0.913	0.402	1.755	0.174	2.431	.014*	11.912	<0.000*
Suspended implementation of goals and objectives.	2.473	0.086	3.371	0.035*	0.899	0.464	18.820	<0.000*
Loss of employees' training and development.	0.815	0.444	0.863	0.423	2.659	0.033*	13.009	<0.000*
Absence of future strategic planning for expansion as to services offered.	1.785	0.169	2.854	0.059	0.611	0.655	11.272	<0.000*
Lack of project plan for expansion as to branches or outlet.	3.213	0.041*	3.147	0.044*	1.272	0.280	2.793	0.002*
Monitoring And Control								
Non-awareness of future instances of fraud within the business.	0.758	0.469	0.706	0.494	0.535	0.710	1.675	0.077
Failure to monitor future risks.	1.259	0.285	2.985	0.052	4.700	<0.000*	3.757	<0.000*
Irregular documentation of risks.	0.067	0.936	0.007	0.993	0.288	0.886	1.216	0.274
Unpreparedness on the future risks.	2.298	0.102	1.593	0.205	0.620	0.648	3.934	<0.000*
Inconsistent evaluation of tasks in achieving objectives and goals of the business.	0.139	0.870	0.877	0.417	0.373	0.828	3.760	<0.000*

** Significant at 0.05 level*

The data indicate that through years of operations, formulating its mission and vision differs, though businesses are influenced by changing environmental factors, they must constantly

adjust their strategic course in the face of numerous opportunities and threats (van der Walt et al., 2004). Furthermore, loss of training and development of employees differ through years of operations. Providing the employees with the necessary skills the first time, it will save time, money, and resources that would otherwise be spent on correcting mistakes (as suggested by (Martinelli, 2022).

In terms of business profile, the result demonstrates that *"lack of project plan for expansion as to branches or outlet"* differs when it relates to business capital and number of employees. The data show that when it relates to a lack of project plans for expansion, service industry businesses differ significantly from business capital and the number of employees in the business. Moreover, indicator 4 which implies that *"absence of future strategic planning for expansion as to services offered"* got the p-value of <0.000 and significantly demonstrates that with regards to industry/sector, business services had different views on the absence of future strategic planning for expansion as to services offered. However, the vision and mission statements, as well as clarification of strategic goals and development processes, will continue to be part of strategic development. These established strategic goals must be used by effective managers to implement, monitor, and evaluate operational strategies. Customers, suppliers, and shareholders frequently base hiring decisions on the organization's performance as well as the strength of its mission and vision. In fact, some studies have shown that high-performing organizations outperform low-performing organizations in many ways, including the creation of better mission and vision statements (Khalifa, 2011). As a result, this has led to the realization that "there is no plan without effective and measurable implementation."

For governance risks on monitoring and control, indicator 2 obtained the p -value of <0.000 both for years of business operation and industry/sector. The results indicated that failure to monitor future risks are significantly different on years of operations and the industry, respectively. While indicator 4 and 5 also got p-value of <0.000 which interpret those risks involve on the indicators were significantly differ as to industry/sector. Preparedness and knowledge in expected and unexpected risk like fire, national disaster and pandemic like COVID-19 is necessary to the survival of the business, people and nation. This is similar to the study of Bartik et al. (2020) that the impact of COVID-19 on small businesses include the emergence of threats such as enormous layoffs and closures and the likelihood of closure was adversely related to the anticipated duration of the crisis.

Table 4

Significant Differences on Employee Retention when Grouped by Business Profile

Employee Retention	Business Capital		Number of Employees		Years of Business Operation		Industry/ Sector	
	f-value	*p-value*	*f-value*	*p-value*	*f-value*	*p-value*	*f-value*	*p-value*
Reduced Turnover								
The management strongly support the professional needs of the employees.	1.963	0.375	2.490	0.288	9.026	0.060	117.788	<0.000*
A workplace security is provided to the employees.	6.275	0.043*	5.560	0.062	12.416	0.015*	120.084	<0.000*
There is a security of tenure regardless of COVID - 19.	7.041	0.030*	7.323	0.026*	12.135	0.016*	119.179	<0.000*
Employee Productivity								
Attractive remuneration packages for employees are provided.	2.586	0.275	2.408	0.300	12.903	0.012*	96.956	<0.000*
A work - life policies are embedded to the employees' welfare.	1.104	0.576	1.103	0.602	13.073	0.011*	142.085	<0.000*
The employees are involved in business planning.	1.919	0.383	1.991	0.370	19.697	0.001*	103.425	<0.000*

** Significant at 0.05 level*

Table 4 shows the significant differences on employee retention when grouped by business profiles. The table shows a strong significant difference on employee retention when grouped according to the business industry/sector. This affirms that findings of Koys (2001) that there is a statistically significant association between an employee's average level of performance and the organization's total productivity. In the industrial sector, there is a negative association between turnover rate and productivity quality, as well as a middle relationship between employment stability and employee performance.

When a country's economy is strong or booming, and job chances for workers to change employers are available, turnover always rises. Employee turnover, on the other hand, decreases during a recession since there are less appealing and permanent job positions. Poor lighting, temperature, unpleasant noise and ventilation, as well as unfriendly co-workers, are all examples of business pressures or diversions (Goani, 2016). These factors can have a greater impact on turnover rates than sentiments about the company, pay, or the job itself. Employee turnover is also higher when relationships with their employers or managers are strained. Furthermore, due to the costs involved with staff turnover, employee turnover can have a direct negative impact on an organization's productivity, sustainability, competitiveness, and profitability. However, the company must understand its employees' needs in order to implement specific tactics to boost employee performance and reduce turnover. Thus, implementing techniques will boost individual and organizational job happiness, motivation, and productivity, reducing employment issues, absenteeism, and employee turnover.

5. Conclusions

This study found that planning is the highest governance risk while unpreparedness on the future risks under monitoring and control. In addition, the respondents claimed to have moderate performance in strong support of the management to the professional needs of the employees and involvement of the employees to the business planning. Results further revealed that business profile as to service sector has a strong significant difference on the difficulty in the formulation of vision and mission, suspended implementation of goals and objectives. Loss of employees' training and development and absence of future strategic planning for expansion as to service offered (p-value <0.000) while the lack of project plan for expansion as to branches or outlet had p-value of 0.002. Meanwhile, when grouped among the years of business operation, difficulty in the formulation of vision and mission and loss of employees' training and development have significant difference. The suspended implementation of goals and objectives and lack of project plan for expansion as to branches or outlet have positive significant difference on the number of employees. As to business category according to capital, only the lack of project plan for expansion as to branches or outlet had a significant difference.

There is a significant difference in the failure to monitor future risks as to years of business operation and service sector and the unpreparedness on the future risks and inconsistent evaluation of tasks in achieving objectives and goals of the business. The indicator that the management strongly supports the professional needs of the employees have significant difference as to service sector likewise with other two remaining indicators such as "a workplace security is provided to the employees" and "there is a security of tenure regardless of COVID - 19."

The establishment of capability programs supported by the local government agencies in partnership with business owners, to reinforce the formulation and implementation of Vision, Mission, Goals and Objectives. In addition, the continuous seminar-workshop for risk reduction management is highly suggested as well as launching free training programs for skilled rich jobs to ensure the employees' quality service to the clients. The government and the business itself may help hand in hand in providing good remuneration to the people. Secured contract if the regularization is unbearable, benefits and professional and emotional seminars and training are highly recommended. Moreover, other strategic risks and business performance assessments are indeed needed for deeper discoveries of the effects of the pandemic to businesses and different industries in the Philippines. Further researches may serve as references to future economic recovery planning of local and national government.

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