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# The Effect of the Tourism Sector, Human Capital, and Economic Openness on Total Productivity Factors in Bali Province 1985 – 2019

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**Abstract**

In order to improve economic performance, increasing labor productivity is very important, because the higher the productivity of the workforce, the more its competitiveness will increase. This study aims to analyze the effect of the tourism sector, human capital, and economic openness on the total factor productivity in Bali Province. The data used is secondary data obtained from the Central Statistics Agency in the form of data on capital formation, labor, average length of schooling, and export-import in Bali Province from 1985 - 2019. The analysis technique used is multiple linear regression. The results showed that the tourism sector and the quality of human capital had a positive effect on total factor productivity in Bali Province during 1985 – 2019, while economic openness had a positive but not significant effect.

**Keywords**: tourism sector; human capital; economic openness; total factor productivity

## INTRODUCTION

In the era of globalization, increasing labor productivity is a target to increase the nation's competitiveness. Among the various forms of production factors, labor (human resources) is one factor that has a very important role in national development and regional development. Apart from being the implementer of development, the workforce also plays a role as the target of development. The experience in developed countries is that an increase in population actually increases aggregate demand and causes an increase in purchasing power and a wider market. Population growth will encourage the expansion of investment because of the increasing household needs and also the increasing needs of a general

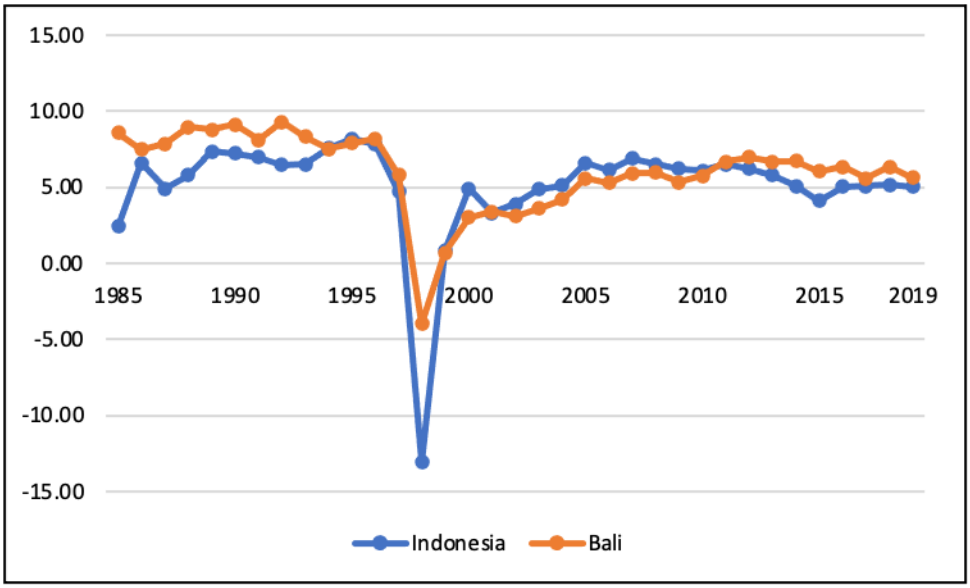


**Figure 1. Comparison of Bali's Economic Growth with Indonesia 1985 – 2019**

nature such as roads, transportation facilities, drinking water and so on. In addition to restricting births, high population growth can be used to encourage economic growth by increasing capital and managerial and administrative capabilities to offset these challenges (Hansen, in Todaro, 2007).

In developing countries with high population growth is the burden of development. Because this will require a lot of food ingredients and a lot of investment to provide jobs. Rapid population development without being matched by an increase in the number of other production factors will lead to diseconomies of scale, which in turn causes people's living standards (as measured by real income per capita) to decline.

As part of Indonesia, during 1985 – 2019 the economic growth of the Province of Bali experienced fluctuations which the pattern was almost the same as the Indonesian economy, as presented in Figure 1. In the period 1985-1997 or before the monetary crisis and economic crisis in Indonesia, the economic performance of the Province of Bali with the indicator of Gross Regional Domestic Product (GRDP) has experienced an average growth of 8.14 percent per year. The economic growth of the Province of Bali in that period was quite fantastic compared to the economic growth of other provinces in Indonesia, which was around 6.14 percent. After the monetary crisis in 1998, namely in 1999 – 2010 the economic growth of the Province of Bali experienced an average growth of

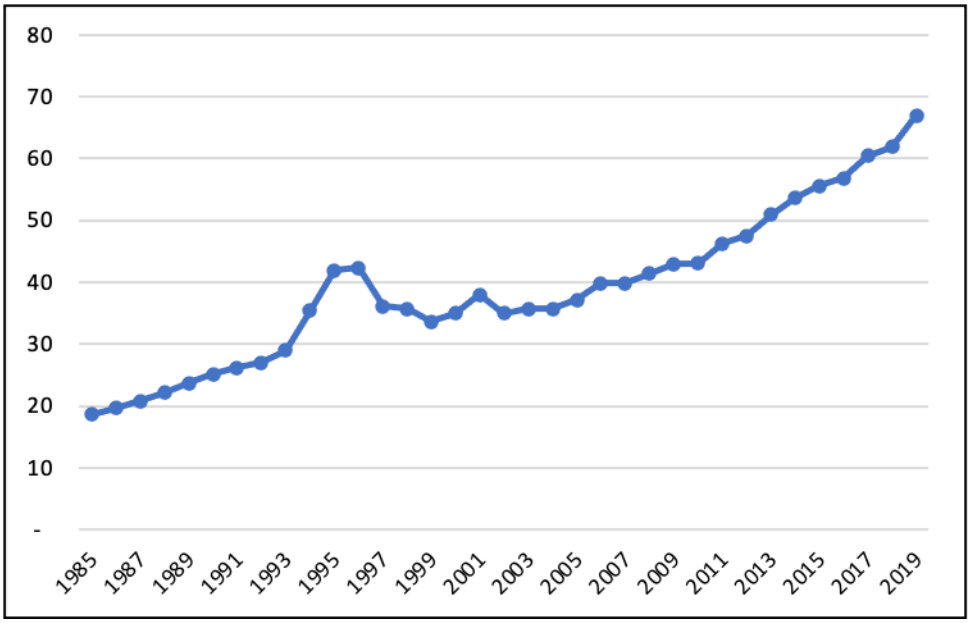


**Figure 2. Development of Labor Productivity in the Province 1985 – 2019 (in million rupiah)**

4.33 percent per year, but in that period, it was below Indonesia's economic growth which grew by an average of 5.11 percent. In the 2011 – 2019 period, the economic growth of the Bali Province was actually above the national average, with an average of 6.32 percent compared to 5.33 percent.

Economic growth in Bali Province in 1985 – 2010 was also followed by an increase in labor productivity. By dividing the value of the Gross Regional Domestic Product (GDP) at constant prices in 2010 by the number of people working during 1985 – 2019 as presented in Figure 2.

In the period 1985 to 1996, labor productivity in Bali Province continued to increase, but decreased during the 1997 to 1999 monetary crisis. In 2000 and 2001, there was a slight increase. In 2002 it decreased slightly with the Bali Bombing I tragedy, and in 2003 it increased again until 2019. The growth of labor productivity in the province during the period 1985 to 2019 was closely related to the development of tourist arrivals to Bali.

In an effort to increase productivity, it has always been tried to be done, namely at first by creating production equipment starting from the simplest, then doing work specialization, increasing human resource skills (labor) to implementing sophisticated management by

combining labor and capital. However, in the traditional production model by installing labor (L) and capital (K) as factors of production, the role of labor quality is not given much attention.

In the 1950s Robert Solow developed a model of economic growth by observing the role of production factors outside of labor and capital, namely factors often referred to as total factor productivity (TFP) that can affect economic growth (Gordon, 2012). In other words, total TFP explains the role of other factors other than labor (human resources) and capital that can affect production. Through the TFP concept, it is hoped that the influence of technological progress (technological development) such as mastery of production technology, level of education and workforce skills, ability to master technology, business scale, and so on to economic growth will be known. Another economic definition of total factor productivity (TFP), also called multi-factor productivity, is the variable that contributes to total output that is not attributable to traditional inputs, such as capital and labor. If all inputs are known, then the total factor productivity (TFP) is a long-term measure of technological change in terms of economics or technological dynamics. Empirically it is clearly not easy to know the influence and role of this technology because of its embodied nature into the role of capital and labor itself (Sugiyanto and Farah, 2009). TFP measurement is done indirectly which is often called the Solow residual, which is the contribution to the total output that is not caused by the input.

The total productivity of an economy is closely related to the economic structure of a region. Todaro (2017) said that the more modern the structure of the economy, the higher the productivity of labor. In developing countries, which have an economic structure that relies on the agricultural sector, productivity productivity is lower than in an economic structure that relies on the industrial and service sectors. The tourism sector in Bali Province, which is the leading sector, has had a lot of impact on the economy. In some countries, tourism has been shown to have an impact on the socio-economic conditions of local communities. According to Cohen (1984) states that the impact of tourism on the economy are: foreign exchange earnings, community income, employment opportunities, prices, distribution of benefits/benefits, ownership and control, development in general, and government revenues.

To measure the role of tourism in the economy of a region/region, it can be done through a tourist expenditure approach and a tourist demand approach for goods and services during a tourist trip. Most of the expenditure of tourists visiting a region or country is allocated for accommodation, food, and other shopping (shopping). The results of research in the UK Cooper (1993) amounted to 81.27 percent and in the Province of Bali 66.81 percent (BPS Province of Bali, 2001). Thus, to measure the role of the tourism sector in an area, it can be seen from the contribution of the trade, hotel and restaurant sectors to the Gross Regional Domestic Product (GRDP).

Furthermore, to examine the influence of the tourism sector on total productivity, the analogy factor is the same as relating the economic structure of a region to total productivity. According to the developmentalist perspective stated by Pye and Lin (1983) that international tourism has contributed a lot to the speed, acceleration and direction of development in developing countries so that it is considered an "entrance" for people's welfare. Apart from being a source of foreign exchange earnings, the tourism industry is felt to have many elements that can "encourage" changes in the economic structure from modern agriculture to a modern industrial society. Todaro (2017) said that the economic structure that still relies on the agricultural sector tends to have lower productivity compared to those that rely on the modern sector (industry and services). This is due to the fact that the agricultural sector tends to be less efficient than the non-agricultural sector. The change in economic structure from traditional to modern will stimulate economic actors to use more modern technology to increase efficiency. Thus, the greater the contribution of this sector to the economy, the greater the impact on total factor productivity.

The role of human capital is very important in the economy, and generally contributes positively to total factor productivity. The important role of human capital in the creation of economic and business value (McGregor et al. 2004; Karami et al. 2006), includes all processes that are able to trigger higher levels of knowledge and create competitive entrepreneurs who are able to run businesses better. In poor countries, low quality human capital has low productivity compared to developed countries that have high quality human capital. Rath and Parida (2014) in their research on five countries in South Asia, namely India,

Pakistan, Sri Lanka, Bangladesh, and Nepal during the period 1980 to 2011 stated that human capital had a positive effect on total factor productivity. Bing and Jigang (2008) also mention that educational progress and technical progress in China have driven the growth of total factor productivity.

In addition to the tourism and human capital sectors, economic openness can also affect the total factor productivity. Economic openness, which is also known as the globalization movement, has clearly increased rapidly, especially in the 1980s. According to Fischer (2003), globalization is defined as "a continuous process of greater economic interdependence among countries reflected in an increase in the amount of cross-border trade in goods and services, an increase in the volume of international financial flows and an increase in labor flows". It is widely accepted that an open economy grows faster than a closed economy. Therefore, economic openness is closely related to labor productivity in a country or region. As stated by Miller and Upadhyay (2000) that potential determinants of total factor productivity include measures of openness, trade orientation, and human capital. Higher openness benefits total factor productivity. Outwardly oriented countries experience higher total factor productivity.

Based on the above background, research will be conducted with the title of the influence of the tourism sector, human capital, and economic openness on the total factor productivity in the Province of Bali. This research is in accordance with the Research Master Plan (RIP) of Udayana University for 2016-2021 in the Leading Fields of Tourism, Economics and Socio-Cultural.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### Total Factor Productivity (TFP) Concept

In economics, total factor productivity or total factor productivity (TFP) is a variable that affects output other than the inputs used. For example, good weather will tend to lead to higher agricultural production, because bad weather can hinder agricultural production. In this case the weather variable is not directly a factor of production, so the weather is considered as a variable of a total productivity factor.

The TFP model was developed from the Cobb-Douglas production function as shown in equation (2.1). Equation (2.1) shows total output (Y)

as a function of total factor productivity (A), capital input (K), labor input (L), and 1-α, respectively, the contribution of capital input and labor input. An increase in A, K and L will lead to an increase in output. Capital and labor inputs are measurable, but total factor productivity or total factor productivity is not measurable. These inputs can range from technology to worker knowledge. The reason for using the Cobb-Douglas function in this equation is because it is able to show constant elasticity (Gujarati, 2002).

$Y = A K^{\alpha} L^{1-\alpha}$ .....(1)

Technological growth and efficiency are recognized as the two biggest contributors to total factor productivity, which also cannot be separated from positive external factors that can increase economic growth. The factor of total productivity is often seen as based on the real growth in an economy, while labor and capital (investment) are important supporters.

After Solow developed his growth theory, he applied it in an effort to measure the growth of total factor productivity (TFPG) or a from equation (01) which is considered as autonomous growth. The growth of a is denoted by the letter a which can be calculated from other components (Gordon, 2012), namely:

$a = (y - n) - b (k - n)$ .....(2)

As long as data is available regarding the growth rate of output (y), growth of capital and labor (k and n), and which is the contribution of capital, then a which is the growth of total factor productivity will be calculated.

**Definition of Tourism**

The tourism sector has been a very important activity as a source of income for entrepreneurs who provide travel services, including lodging and restaurants since 1600. This was stated by Thomas Mun, a Mercantilist figure who was written in his book Navigation Act in 1660, so that revenue from activities it is classified as an invisible item (Spiegel, 1991: 110).

Murphy (1985: 6) defines the tourism sector as a whole of elements related to tourists, tourist destinations, travel, industry, and others, which are the result of tourist trips to tourist destinations as long as the trip is not permanent. This is similar to the limitations given by Fennel (1999: 4) that tourism is a system that includes tourists and the services provided (in the form of facilities, attractions, transportation,

and accommodation) to satisfy and support their journey.

In addition to these definitions Marpaung (2002: 1) defines tourism as a temporary movement carried out by humans with the aim of getting out of their routine work or also from their place of residence. In this regard, Bull (1991: 3) and Soekadijo (2000: 2) say that the tourism sector is all community activities related to tourists, because tourism consists of various organizational activities that provide goods and services for tourists, such as tourist transportation. accommodation, human attractions and natural attractions, personal services and government services, intermediaries such as traders and travel agents, the tourism sector is often called the tourism industry.

In relation to the various definitions of tourism as previously mentioned, in this study tourism is seen from the income indicators of the trade, hotel and restaurant sectors, which are economic activities that are directly related to tourists.

**Definition of Tourist**

Limitations on the understanding of tourists vary widely, ranging from the general to the specific. The United Nations Conference on Travel and Tourism in Rome in 1963 provided a more general limitation on tourists by using the term "visitor" as quoted by Pitana (2005: 45) that a tourist is any person who visits a country that is not his place of residence, for various purposes, but not to find work or a living from the country visited.

This definition has also been used by the International Union of Official Travel Organizations (IUOTO) since 1968. This limitation actually only applies to international tourists, but the analogy can also be applied to domestic tourists by dividing the country into provinces. Furthermore, visitors are divided into two, namely (1) tourists (tourists) are those who visit an area more than 24 hours and (2) travelers (excursionists) are those who stay in tourist destinations even though for less than 24 hours.

The definition of a tourist (tourist) according to the Central Bureau of Statistics (BPS Province of Bali, 2001) according to the definition of the International Union of Official Travel Organization (IUOTO) is a person who travels/visits a place outside their usual environment (usual environment) in the long term. not more than a year for the purpose of pleasure (leasure), or other purposes. In this regard, it does not include salesmen, hospital patients, detainees, employees/employees who

transfer jobs to other places, military duties, and people who do not have a permanent residence (homeless).

Residents who can be said to be tourists can come from foreign nationals/foreign tourists (tourists), Indonesian citizens/domestic tourists (wisnus). A foreign tourist or international tourist is someone who has a residence in a country and travels to another country, in this case to Indonesia. During the trip they stay less than one year (BPS Province of Bali, 2001). Domestic tourists or domestic tourists are Indonesian residents, other than Balinese residents, who travel in Bali for the purpose of vacation, recreation, and so on, but not for work within a period of one day (24 hours) and less than one year.

In relation to domestic tourists, based on the concept above, it can be distinguished into tourists who come from outside the area of Bali or residents from other provinces who travel to Bali and residents of Bali who travel in Bali (local tourists).

Various interests that encourage a person or group of people to travel to a place, among others, because of economic, social, cultural, political, religious and other interests, whether they are just curious, gain experience, or learn. Some things that can attract tourists to visit an area according to Sukarsa (1999: 42) are as follows.

(1) The area must have what is referred to as "something to see", meaning that in that place there must be a tourist attraction and tourist attraction that is different from what is owned by other regions.
(2) The area must provide what is called "something to do", meaning that in addition to many places that can be seen and witnessed, recreational facilities or "amusements" must also be provided that can make them feel at home for longer.
(3) The area must provide what is called the term "some thing to buy", meaning that there must be facilities for shopping (shopping), especially souvenir items and folk crafts as souvenirs to take back to their respective places. -each. This shopping facility does not only provide goods that can be purchased, but also other supporting facilities to make things easier, such as money changers, banks, post offices, telephone offices, and so on.

The results of the research of the Bali Provincial Tourism Office in 2003 obtained information that 93 percent of foreign tourists who came to the

tourist destination (DTW) Bali aimed for a vacation. Likewise, domestic tourists, namely 49.29 percent of their arrivals to Bali for vacation. The second destination for foreign tourists is for business/business, which is 2.71 percent, while for domestic tourists it is for conferences/seminars as much as 17.28 percent, then the task of the government is 10.20 percent, and the rest is for family and other interests. In addition, there are several things that are considered positive by tourists towards Bali as a tourist destination according to a sample of foreign and domestic tourists. Most of them give a positive assessment of the pristine nature of Bali, the attraction by the unique culture, and the friendliness of the people (Pitana, 2005: 76).

**The Effect of Tourism on the Economy**

Tourism plays an important role in the economy of a region. This was stated by Perloff and Wingo (1975) with the resource base theory, which in essence said that after the era of agricultural development and industrialization an area was developed (developed) because it had "amenity resources" in the form of attraction for a place because the climate and beauty caused a person to be attracted to it. for living and recreation, attracting migration and entrepreneurs to invest in the area.

The impact of tourism on the socio-economic conditions of local communities by Cohen (1984) grouped into eight major groups, namely (1) the impact on foreign exchange earnings, (2) the impact on people's income, (3) the impact on employment opportunities, (4) the impact on prices -price, (5) impact on the distribution of benefits/benefits, (6) impact on ownership and control, (7) impact on development in general, and (8) impact on government revenue.

As an economic sector, Spillane (1989: 47) says that the tourism industry is a very long chain that accommodates many job opportunities for the surrounding community. This sector also causes people's income to increase from the sales of goods and services through restaurants, hotels, travel agencies, tour guides, sales of souvenirs, and so on. With the increasing number of tourists who come, the more foreign exchange will be received and encourage the development of transportation infrastructure, hotels and restaurants.

The role of tourism in the economy is also stated by Child & Waters in the Travel Industry World Year annual report in the form of

income arising from total taxes, federal, state and local taxes, as well as tourist receipts and spending on related goods and services (Lundberg et al.., 1997: 15). Bull's article (1991: 132) states that tourism development in several countries is not only able to increase people's income and employment, but also contributes to the normative goal of development, which is to improve the distribution of people's income.

Ave (2006) also said that tourism has cross-sectoral and business linkages and is able to generate a significant multiplier effect, especially for SMEs (Small and Medium Enterprises) so that it can help create jobs and increase people's incomes. The impact of tourism on the economy is categorized as direct (direct effect), indirect (indirect effect), and induced effect. Tourist shopping is directly enjoyed by hotels, guides, tourist destinations, airlines, transportation companies, travel agencies, galleries, art shops, and financial services. The indirect impact is enjoyed by employees of hotels, restaurants, travel agencies, tourist destinations, transportation drivers, tax revenues for the government, souvenir craftsmen, artists, printers, vegetable and fruit traders, gas stations and so on. Side effects include increasing incomes for vegetable and fruit farmers, breeders, suppliers of raw materials for handicrafts, the industrial sector, trade, and the agribusiness sector.

In addition, according to the developmentalist perspective stated by Pye and Lin (1983) it is emphasized that international tourism has contributed a lot to the speed, acceleration and direction of development in developing countries so that it is considered an "entrance" for people's welfare. Apart from being a source of foreign exchange earnings, the tourism industry is felt to have many elements that can "encourage" changes in the economic structure from modern agriculture to a modern industrial society.

In line with this opinion, Pitana (2005: 118) quoting the opinion of Pizam and Milman said that, in addition to other impacts, tourism also has an impact on changes in people's livelihoods or people's work and people's consumption patterns. Pizam and Milman also classify these impacts as socio-cultural impacts, but Chenery and Syrquin (1975: 9) these impacts can be classified as the impact of changes in economic structure.

To measure the influence of tourism on the economy of a region, it can be done through a tourist expenditure approach and a tourist

demand approach for goods and services. Tourist expenditures are expenditures made by tourists during their travels. Tourist expenditures can be in the form of accommodation, food consumption, tourist transportation, or other services such as tour guides, money exchange services, and so on. Direct tourist demand can be used to see the contribution of tourists to GRDP so that there is a relationship between tourist demand for goods and services and the industry that provides these goods and services (Statitstic Central Board for Province of Bali, 2001).

Cooper's research (1993) states that in the UK 81.27 percent of total foreign tourist spending is allocated for accommodation, food and other shopping (shopping), while domestic tourists allocate around 74.2 for these expenditures. The results of a research by the Statitstic Central Board for the Province of Bali in 2000 stated that 70.98 percent of the expenditure of foreign tourists visiting Bali was allocated for the trade, hotel and restaurant sectors, while for domestic tourists' 43.59 percent. On average, the expenditure of foreign and domestic tourists allocated to the trade, hotel and restaurant sectors was 66.81 percent. In this regard, the role of the tourism sector in the economy can be seen from the expenditure of tourists on goods and services while in tourist destinations. In aggregate, the role of the tourism sector in the economy of a country or region can be seen from its contribution to Gross Domestic Product (GDP) or Gross Regional Domestic Product (GRDP).

Tourist spending can have an impact, either directly or indirectly. The direct impact is the result of direct purchases of goods and services available in the area where tourists travel. On the other hand, the indirect impact includes the purchase of goods and services by tourists which indirectly affects the economic sectors that procure these goods and services, both producers and sales. For example, wholesalers who sell goods to retailers which are then purchased by tourists or producers who produce goods/services and their goods or services are purchased by tourists through retail traders.

**Human Capital**

Human capital has an important role in the creation of economic and business value (McGregor et al. 2004; Karami et al. 2006). Human capital includes all processes that can trigger higher levels of knowledge and produce entrepreneurs who are competitive and able to run businesses better. The ability factor

and quality human capital skills are needed to improve company performance, especially in small and medium industries. Therefore, human development must be carried out so that human quality can be improved for the sake of economic development, especially through improving the quality of industrial human resources.

The concept of human capital according to the modern view was pioneered by Schult in 1960 (in Breton, 2014). In its development, the concept of human capital can be explained as the ability or capacity either from birth or descent or collection formed during productive working age followed by other forms of capital or inputs aimed at achieving economic stability.

Human capital, in simple terms, is nothing but physical capital like property, equipment, and financial capital. In the previous century, the share of physical capital in gross domestic product in developed countries' economies had fallen sharply, while the share of human capital had risen. The increasing share of human capital in gross domestic product has created the concept of a knowledge economy. Various types of capital have been considered as inputs, which enter the process of producing goods and services, but human capital is not considered a simple input, because it plays a more complicated role in the process of producing or providing goods and services. Human resources exhibit intrinsic talent, which can change or moderate themselves and other inputs. These characteristics lead to a relentless economic dynamism (Menzies, 2003). Human capital refers to knowledge, education, work competence, and psychometric evaluation (Namasivayam & Denizci, 2006). The concept of human capital has its roots in the economic literature (Becker, 1996). Human capital is not both physical capital or financial capital. In fact, this capital has been defined as knowledge, skills, creativity, and individual health (Becker, 2002).

**Economic Openness**

The term economic openness first appeared in the comparative political economy literature in the early 1980s. Conceptually, however, economic openness has a longer history, especially in the field of international economics. In fact, the history of studying the cause and effect of an open economy dates back to the 18th century and figures are prominent in the work of classical economists such as Adam Smith and David Ricardo. These classical economists were concerned about the

consequences of international trade on the domestic economy as well as the positive and negative effects of free trade.

It is widely accepted that an open economy grows faster than a closed economy. The globalization movement increased rapidly, especially in the 1980s, this situation became clearer. According to Fischer (2003), globalization is defined as "a continuous process of greater economic interdependence among countries reflected in an increase in the amount of cross-border trade in goods and services, an increase in the volume of international financial flows and an increase in labor flows". During the 20th century, the import substitution strategy (ISI) played a dominant role in most developing countries as a development strategy.

Recently, the meaning of "openness" has become synonymous with the idea of "free trade" i.e., a system in which all trade distortions are eradicated. Pritchett (1996) simply defines "openness" as the intensity of economic trade. However, according to Stensnes (2006), it would be more appropriate to define openness in terms of reducing international trade barriers imposed by the government. To measure the economic openness index in this study, it was adapted from Maddison's Monitoring the World Economy 1820–1992 (1995) which was calculated as follows:

Impex = imports + exports / GDP x 100 percent .....(3)

Hwang and Wang (2004) examined the effect of openness to trade on total factor productivity (TFP) using data from 45 Japanese manufacturing industries. The extreme limit analysis test (EBA) was used to perform the sensitivity analysis. The EBA results of the Japanese manufacturing industry test do not support the "good trade and growth cycle" hypothesis. First, among several growth measures, output growth appears to be mostly strong and positive in explaining the TFP growth of the 45 Japanese manufacturing industries. Second, most of the variables of openness to trade do not show a strong and positive relationship with TFP growth. Considering the findings that trade expansion has insignificant and ambiguous effect on TFP growth, the scale effect of output growth may have influenced the growth of Japanese manufacturing industry in the 1973-1998 period.

## METHOD

### Location and Time of Research and Types and Sources of Research Data

The research was conducted in Bali Province using data from 1985 to 2019. The research will be carried out for 6 (six) months, from May to October 2021. According to the nature of the data used in this study is quantitative data or has a unit of account. The data is investment data using Gross Domestic Fixed Capital Formation (PMTDB), GRDP, employment, the contribution of the trade, hotel and restaurant sectors, the average length of schooling of the population, and export-import in Bali Province during 1985 - 2019 Investment, GRDP, and export-import data are calculated based on 2010 constant prices.

The data used comes from secondary sources in the form of time series obtained from the Central Statistics Agency of Bali Province, namely Gross Domestic Fixed Capital Formation (GDFCF), GRDP, employment, the contribution of the trade, hotel and restaurant sectors on average. the average length of schooling of the population, changes in economic structure, and export-import in the province of Bali during 1985 - 2019.

**Variable Operational Definition**

1) The growth of total factor productivity (TPF) is the growth of economic productivity in the aggregate which is not a contribution from the growth factors of capital and labor, which is calculated by subtracting the growth rate of output (y) with the growth of capital (k) and labor (n), and which is the contribution of capital in the production function as its weight. The unit TPF is percent.
2) Gross Regional Domestic Product (GRDP) which is the output of the economy is the value of economic activity produced in the Province of Bali every year according to the 2010 constant price (in million rupiah). The growth rate of output growth (y) in this study is the change in the total added value generated or GRDP by economic sectors in Bali Province in a certain year with the previous year during the period 1985 - 2019, which is calculated in percent.
3) The investment referred to in this study is the value of Gross Domestic Fixed Capital Formation (GDFCF) covering various kinds of expenditures for the procurement, manufacture and purchase of new capital goods, which are produced in the domestic/region and new and used capital goods originating from the domestic/region other or imported from abroad (Statitstic Central Board for Bali Province,

2020). And the capital growth rate (k) in this study is the change in the total value of investment in Bali Province in a given year with the previous year during the period 1985 - 2019, which is calculated in percent.

4) The growth of employment absorption is the change in the total population working in the Province of Bali in a certain year with the previous year during the period 1985 - 2019, which is calculated in percent.
5) Increasing the contribution of the tourism sector in this study is the increase or decrease in the percentage of contributions in the trade, hotel and restaurant sectors to the GRDP in Bali Province in a certain year with the previous year during the period 1985 - 2019, in percent units.
6) The increase in the level of quality of human capital in this study is an increase in the average length of schooling of residents in Bali Province in a certain year with the previous year during the period 1985 - 2019, which is calculated in years.
7) The increase in economic openness in this study is the increase in the ratio of the value of exports and imports divided by the total GRDP in the Province of Bali in a certain year with the previous year during the period 1985 - 2019, in percent units.

**Data Analysis Technique**

In this study, several analytical methods were carried out, namely descriptive statistics and multiple regression analysis. Data were analyzed using Excel and Eviews programs. To calculate the growth of Total Factor Productivity (TFP) first look for the production function of the economy of the Province of Bali with the Cobb-Douglas model. The reason for using the Cobb-Douglas function in this equation is because it is able to show constant elasticity (Gujarati, 2010).

$Y = A K^{\alpha} L^{1-\alpha}$ .....(4)

Equation (3.1) shows total output or GRDP (Y) as a function of total factor productivity (A), capital input (K), labor input (L), and 1-α, respectively, the contribution of capital input and labor input. An increase in A, K and L will lead to an increase in output. Capital and labor inputs are measurable, but total factor productivity or total factor productivity is not measurable.

Furthermore, equation (3.1) is transformed into logarithmic form, so that it becomes:

Ln Yt = Ln A t + Ln K t + (1- ) Ln L t + t.....(5)

After obtaining the capital contribution, in equation 3.2 it is, and data on GRDP growth, capital growth and labor growth are available, then the next step is to calculate the total factor productivity growth with the formula:

at = (yt – nt) – b (kt – nt) .....(6)

Information:
a = growth in total factor productivity
b = capital coefficient
y = output growth (GDP)
k = capital growth
n = labor growth
t = specific year

To analyze the effect of increasing the contribution of the trade, hotel, and restaurant sectors, human capital as reflected by an increase in the average length of schooling and economic openness to total factor productivity, multiple linear regression analysis was used with the equation:

$a_t = \alpha_t + \beta_1 PSP_t + \beta_2 PMM_t + \beta_3 PKE_t + \varepsilon_t$ .....(7)

Information
a = growth in total factor productivity
α = constant
$\beta_1$, $\beta_2$, $\beta_3$, = regression coefficient
PSP = tourism sector growth
PMM = human capital growth
PKE = growth in economic openness
ε = is residual
t = specific year

All regression equations (3.3) and (3.4) were tested by testing the validity of the model (F test) and partially testing (t test).

## RESULTS AND DISCUSSION

### Description of Research Variables

In this study, five variables were used, namely GRDP, investment (Gross Domestic Fixed Capital Formation), labor, the tourism sector as a proxy for the percentage of GRDP in the tourism sector to total GRDP, the quality of human resources with a proxy for the average length of schooling, and economic openness with a proxy for the ratio of the total value of exports and imports divided by the total GRDP.

Tthe GRDP of Bali Province experienced an average growth of 5.94 per year during the period 1985 - 2019. The highest growth occurred from 1989 to 1990 with a growth of 9.0 percent, while the lowest was from 1997 to 1990. 1998, which was -4.0 percent during the Monetary Crisis that hit Indonesia.

Investment growth during 1985 – 2019 averaged 6.47 percent, and the highest occurred in 2004 at 13.27 percent, namely after the Bali Bombing II Tragedy, in 2002, while the lowest occurred in 1998 at -21, 14 percent, when the Monetary Crisis hit Indonesia. For the workforce in the province, the average growth is around 2.15 percent during this period. The highest labor growth occurred from 1991 to 1992 at 4.68

percent, while the lowest occurred in 2000 to 2001 at -3.65 percent, which is when investment growth in Bali is still relatively low.

The contribution of the tourism sector to the economy during 1985 – 2019 had an average of 26.90 percent. The highest contribution occurred in 2008 at 30.77 percent, while the lowest occurred in 1985 at 14.96 percent. In contrast to other macro data, the average length of schooling in the province from 1985 to 2019 continues to increase. In 1985 the average length of schooling in Bali Province was 5.16 years and in 2019 it was 8.84 years.

The level of economic openness in Bali Province which is the sum of the percentage of exports and imports to GRDP during 1985 – 2019 fluctuated somewhat, with an average of 70.12 percent. The highest level of economic openness was in 2008, which was 79.50 percent, while the lowest was 61.57 percent in 1992.

**Bali Province Economic Production Function (1985 – 2019)**

Based on the results of processed data regarding the effect of investment (capital) and labor in Bali Province during 1985 – 2019 the production function of the Balinese economy can be made as follows:

$$\ln\hat{Y} = -2{,}880 + 0{,}308\ \ln K + 1{,}468\ \ln L \quad \text{.....(8)}$$

$S_b$ = (1,727) (0,113) (0,373)

t = (-1,667) (2,710) (3,941)

Prob = (0,1,05) (0,011) (0,000)

$R^2$ = 0,968 F = 483,12 Prob = 0,000

Statistically, the investment (capital) and labor variables have a simultaneous effect on the GRDP in Bali Province during 1985 – 2019. This is shown by the calculated F of 483.12 with a probability of 0.000.

The value of the coefficient of determination or R2 = 0.968 means that 96.8 percent of the variation of GRDP in Bali Province during 1985 – 2019 is explained by variations in investment (capital) and labor, while the remaining 3.2 percent is explained by variations in other variables. not included in the model.

Partially the investment variable (capital) has an effect on GRDP in Bali Province during the years 1985 – 2019. This is shown by the t count of 2.710 with a significance of 0.011, or with probability. The labor variable also has a significant effect on GRDP in the Province of Bali with a t count of 3.941 with a significance of 0.000.

The regression coefficient of investment (capital) of 0.308 means that if there is an increase in investment of one percent, it will increase the GRDP of the Province of Bali by an average of 0.308 percent

during 1985 - 2019, assuming other variables are constant. The workforce has a regression coefficient of 1.468 which means that if there is an increase in the workforce of one percent, it causes the GRDP of the Province of Bali to average 1.468 percent with the assumption that other variables are constant.

**Table 2. Total Factor Productivity Growth of Bali Province, 1985 – 2019**

| Tahun | TFPG | Tahun | TFPG | Tahun | TPFG |
|---|---|---|---|---|---|
| 1985 | - | 1997 | 11.09 | 2009 | 2.39 |
| 1986 | 2.54 | 1998 | 6.39 | 2010 | -2.24 |
| 1987 | 6.79 | 1999 | -3.63 | 2011 | 2.85 |
| 1988 | 7.55 | 2000 | -1.22 | 2012 | 1.16 |
| 1989 | 5.66 | 2001 | 6.6 | 2013 | 5.49 |
| 1990 | 2.84 | 2002 | -5.48 | 2014 | 5.24 |
| 1991 | 1.16 | 2003 | -3.44 | 2015 | 2.38 |
| 1992 | 2.64 | 2004 | -3.20 | 2016 | 0.87 |
| 1993 | 1.76 | 2005 | -0.69 | 2017 | 7.46 |
| 1994 | -6.23 | 2006 | 4.30 | 2018 | 0.52 |
| 1995 | 0.80 | 2007 | -3.25 | 2019 | 6.52 |
| 1996 | 8.64 | 2008 | 1.97 | - | - |

Source: Processed Research Data

**Total Factor Productivity Growth of Bali Province 1985 – 2019**

Based on the regression equation 4.1 if the capital coefficient is entered into the Total Factor Productivity Growth equation it will be as follows:

$\hat{a}_t = (y_t - n_t) - 0{,}308(k_t - n_t)$ .....(9)

Information:

â = total factor productivity growth (TFPG)

b = capital coefficient

y = output growth (GDP)

k = capital growth

n = labor growth

t = specific year

The results of the Bali Province Total Factor Productivity Growth during 1985 – 2019 using GRDP growth, investment (capital), and labor can be seen in Table 2.

Based on Table 2, it can be explained that according to equation 4.2, the Total Factor Productivity Growth (TFPG) of Bali Province, 1985 – 2019 which was formed from the GRDP growth rate (y) by eliminating investment or capital growth (k), and labor growth (n). The higher the economic growth (y) with the assumption that investment or capital variables (k) and labor (n) are constant, the higher the TFPG. However, if economic growth (y) does not increase, but investment or capital (k), or labor (n) is constant, it causes TFPG to decrease. Likewise, if investment or capital (k), or labor (n) increases, with GRDP (y) not

increasing, it causes TFPG to decrease. This is explained by the empirical facts of cases in Bali Province during 1985 – 2010 which are presented in Figure 3.

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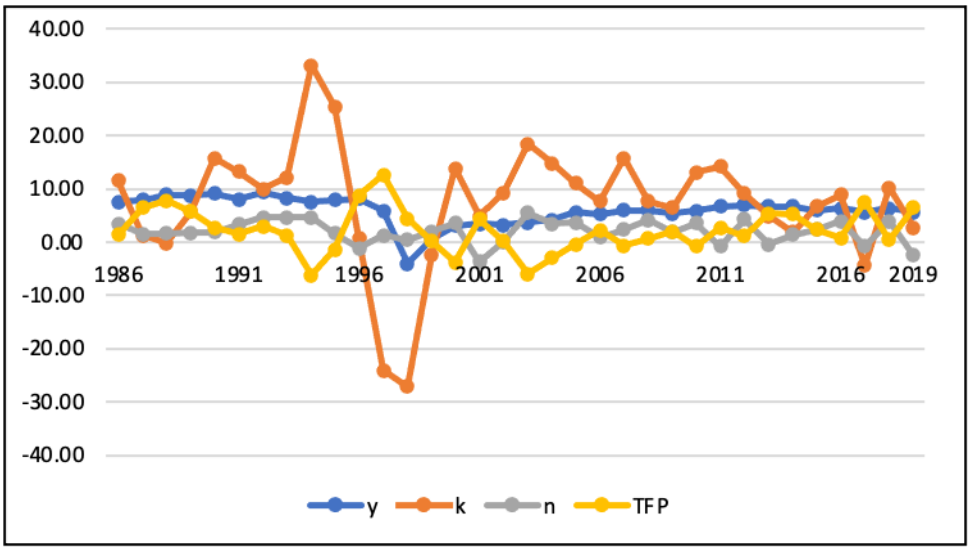


**Figure 3. Relationship Between Total Factors of Productivity Growth (TFPG) with GRDP Growth (y), Investment Growth (k) and Labor Growth (n) in Bali Province, 1985 – 2019**

If we look closely, the total economic productivity factor in Bali Province during 1985 - 2019 has an average of 2.20 percent, on the other hand, GDP growth is an average of 5.94 percent during that period. When the two numbers are compared, the percentage is 36.93 percent. This figure is quite good, because based on research conducted by the World Bank (1993), a situation where the contribution of TFP growth is less than 30 percent of gross domestic product (GDP) is considered poor.

**The Effect of Increasing the Contribution of the Tourism, Education and Economic Openness to Total Factor Productivity Growth in the Province of Bali, 1995 – 2019**

Based on Appendix 8, a regression model can be made of the effect of increasing education and changes in economic structure on Total Factor Productivity Growth in the Province of Bali, 1995 – 2019, with the following equation.

$\hat{a}_t$ = 0,734 + 1,280 $PSP_t$ + 12,279 $PMM_t$ + 9,553 $PKE_t$.....(10)

$S_b$ = (0,753) (0,572) (5,429) (0,385)

T = (0,497) (2,239) (2,262) (1,437)
Prob = (0,623) (0,033) (0,031) (0,161)
$R^2$ = 0,558 F = 12,659 Prob = 0,000

Simultaneously, the variable of increasing the contribution of the tourism sector to GRDP (PPS), the quality of human resources, which in this case is proxied by the average length of schooling of the population (PMM), and economic openness have an effect on Total Factor Productivity Growth in Bali Province, 1995 – 2019. This is indicated by the calculated F of 12.659 at a probability of 0.000, which is less than one percent.

The coefficient of determination of 0.558 means that around 55.8 percent of the variation of Total Factor Productivity Growth in Bali Province, 1995 – 2019 is influenced by variations in the tourism sector variables to GRDP (PPS), the quality of human resources which in this case is proxied by an average population's length of schooling (PMM), and economic openness, while the remaining 44.2 percent is explained by other variables not included in the model.

Partially, the variable of increasing the contribution of the tourism sector to GRDP (PPS), the quality of human resources, which in this case is proxied by the average length of schooling of the population (PMM), has a positive and significant effect on Total Factor Productivity Growth in Bali Province, 1995 – 2019, because with a t table with a right-hand side test with a significance level of 5 percent and 22 degrees of freedom is 1.717, while the t-count results are 2.239 and 2.262, respectively. The variable of economic openness, although it has a positive effect on Total Factor Productivity Growth in Bali Province, 1995 – 2019, is not significant, because the t count is 1.437, while the t table is 1.717.

The regression coefficient of the tourism sector's contribution to GRDP (PPS) of 1.280 means that by increasing the contribution of the tourism sector by one percent, it can increase Total Factor Productivity Growth by 1.280 percent, assuming other variables are constant. From the data in Appendix 2, it can be seen that the increase in the contribution of the tourism sector to GRDP during 1985 - 2019 was 0.34 percent, while Total Factor Productivity Growth in the same period increased by 2.27 percent.

The regression coefficient of the increase in the quality of human resources with the proxy for an increase in the average length of schooling (PRLS) of 12.279 means that an increase in public education in an average of one year will increase the Total Factor Productivity Growth

of 12.279 percent, assuming the other variables are constant. From the data in Appendix 2, it can be seen that the increase in the average length of schooling (PRLS) during 1985 – 2019 was 0.11 years, while Total Factor Productivity Growth in the same period increased by 2.27 percent.

The influence of the quality of human resources on TFP can be seen in Paitoon (2009) in his research in Thailand that the quality of human capital plays an important role in TFP. The results of a study by Eng (2009) from Australia National University on Indonesia's TFP in the period 2000 – 2001 showed an average figure of 1.7 percent. Therefore, to support sustainable economic growth in the future, increasing mastery of technology, which among other things can be done by increasing the qualifications of the workforce, either through increasing education or expertise (knowledge and skills) is something that must be done.

The regression coefficient of the economic openness variable (PKE) of 0.553 means that an increase in economic openness or an increase in the percentage of export-import activities by one percent results in an increase in Total Factor Productivity Growth of 0.553 percent, assuming the other variables are constant.

The regression coefficient of the increase in the quality of human resources with the proxy for an increase in the average length of schooling (PRLS) of 12.279 means that an increase in public education in an average of one year will increase the Total Factor Productivity Growth of 12.279 percent, assuming the other variables are constant. From the data in Appendix 2, it can be seen that the increase in the average length of schooling (PRLS) during 1985 – 2019 was 0.11 years, while Total Factor Productivity Growth in the same period increased by 2.27 percent.

The influence of the quality of human resources on TFP can be seen in Paitoon (2009) in his research in Thailand that the quality of human capital plays an important role in TFP. The results of a study by Eng (2009) from Australia National University on Indonesia's TFP in the period 2000 – 2001 showed an average figure of 1.7 percent. Therefore, to support sustainable economic growth in the future, increasing mastery of technology, which among other things can be done by increasing the qualifications of the workforce, either through increasing education or expertise (knowledge and skills) is something that must be done.

The regression coefficient of the economic openness variable (PKE) of

0.553 means that an increase in economic openness or an increase in the percentage of export-import activities by one percent results in an increase in Total Factor Productivity Growth of 0.553 percent, assuming the other variables are constant.

The results of the study on the effect of economic openness on TFP are in accordance with the writings of Hwang and Wang (2004) in their research in Japan showing that economic openness to trade does not show a strong and positive relationship with TFP growth. The positive influence of economic openness on TFP is in accordance with Jajri's (2007) writing that economic openness in Malaysia is believed to be an important contributor to the growth of TFP. The research of Naz, et.al (2015) tries to explore the impact of trade openness on the total factor of productivity growth in a panel of 94 countries in the world during the period 1964 to 2003, consisting of 23 high-income countries, 43 middle-income countries, and 28 low-income countries. Its empirical findings show that growth in total factor productivity is positively influenced by trade openness for the comprehensive sample as well as its three country sub-groups. Furthermore, it also finds that the magnitude of the impact of trade on productivity growth is highest for high- and middle-income countries than for low-income countries.

## CONCLUSION, IMPLICATION AND LIMITATION

The growth of total factor productivity in the Province of Bali during 1985 – 2019 fluctuated, but had a tendency to increase by having an average of 2.20 percent, on the other hand the average GRDP growth of 5.94 percent during the period. When the two numbers are compared, the percentage is 36.93 percent. This figure is considered quite good because it exceeds 30 percent according to the World Bank's (1993) criteria.

Simultaneously the variables of increasing the contribution of the tourism sector to GRDP, improving the quality of human resources and economic openness affect the growth of total factor productivity in Bali Province, 1985 - 2019. Partially, the variable of increasing the contribution of the tourism sector to GRDP and improving the quality of human

resources have a positive and significant effect on the growth of total factor productivity in Bali Province, 1985 – 2019. The variable of economic openness although it has a positive effect on the growth of total factor productivity in Bali Province, 1985 – 2019, but not significant.

With the positive and significant impact of increasing the contribution of the tourism sector to GRDP and improving the quality of human resources on the growth of total factor productivity in the Province of Bali, the government is expected to continue to promote the tourism sector and improve public education by spreading schools to various remote areas and providing assistance to schools, scholarships for underprivileged communities.

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